

DEPARTMENT OF THE ARMY

U.S. ARMY ENVIRONMENTAL HYGIENE AGENCY ABERDEEN PROVING GROUND, MARYLAND 21010-5422



REPLY TO Attention of

HSHB-ML-T (40)

.1 5 AUG 1994_

MEMORANDUM FOR RECORD

SUBJECT: Toxicological Study No. 75-51-YJ81-93, 4-Amino 2-Nitrotoluene (4A2NT) OralApproximate Lethal Dose 14-Day Range Finding and 90-Day Subchronic Feeding Studies in Rats, August 1991 - November 1993

Copies of report with Executive Summary are enclosed.

FOR THE COMMANDER:

Encl

MAURICE H. WEEKS
Chief, Toxicology Division

U.S. Army Environmental Hygiene Agency



TOXICOLOGICAL STUDY NO. 75-51-YJ81-93
4-AMINO 2-NITROTOLUENE (4A2NT)
ORAL APPROXIMATE LETHAL DOSE
14-DAY RANGE FINDING AND 90-DAY
SUBCHRONIC FEEDING STUDIES
IN RATS
AUGUST 1991 - NOVEMBER 1993



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DEPARTMENT OF THE ARMY

U.S. ARMY ENVIRONMENTAL HYGIENE AGENCY ABERDEEN PROVING GROUND, MARYLAND 21010-5422



REPLY TO ATTENTION OF

EXECUTIVE SUMMARY
TOXICOLOGICAL STUDY NO. 75-51-YJ81-93
4-AMINO 2-NITROTOLUENE (4A2NT)
ORAL APPROXIMATE LETHAL DOSE
14-DAY RANGE FINDING AND 90-DAY
SUBCHRONIC FEEDING STUDIES
IN RATS
AUGUST 1991 - NOVEMBER 1993

- 1. PURPOSE. The oral approximate lethal dose study was conducted to determine an approximate dosage range at which to begin the 14-day range finding feeding study. The 14-day feeding study served as a range finding study to determine the dosages used in the subsequent subchronic feeding study. The subchronic study was conducted to determine the toxic effects associated with the continuous oral exposure of 4A2NT in rats over a period of 90 days and to establish a no-observed-adverse-effect-level (NOAEL).
- 2. CONCLUSIONS. The oral approximate lethal dose for 4A2NT in both sexes was 5000 mg/Kg. The 14-day range finding study suggested a probable compound related effect in the 2000 ppm (high dose) exposure groups of both sexes and a possible compound related effect in the 1000 ppm (middle dose) exposure groups of both sexes. An NOAEL was not established for the 90-day subchronic study. The lowest dosage levels in this study were 27 mg/Kg/day for males and 32 mg/Kg/day for females. A lowest-observed-adverse-effect-level of 27 mg/Kg/day for males and 32 mg/Kg/day for females was established.



DEPARTMENT OF THE ARMY

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ABERDEEN PROVING GROUND, MARYLAND 21010-5422



REPLY TO ATTENTION OF

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TOXICOLOGICAL STUDY NO. 75-51-YJ81-93
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14-DAY RANGE FINDING AND 90-DAY
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1. REFERENCES. See Appendix A.

2. PURPOSE.

- a. The oral approximate lethal dose study was conducted to determine an approximate dosage range at which to begin the 14-day range finding feeding study.
- b. The 14-day feeding study served as a range finding study to determine the dosages used in the subsequent subchronic feeding study.
- c. The subchronic study was designed to determine the toxic effects associated with the continuous oral exposure of 4-amino 2-nitrotoluene (4A2NT) in rats over a period of 90 days and to establish a no-observed-adverse-effect-level (NOAEL).
- 3. GENERAL. 4-amino-2-nitrotoluene is a photolytic metabolite of 2,4-dinitrotoluene (2,4-DNT). The 4A2NT is a potential contaminant at army ammunition plants and depots which are historically associated with 2,4-DNT. Little toxicity data is available and these studies were conducted to provide basic information on the potential toxicity of this material. This information will be used to predict the probable risk to human health posed by this compound.

4. MATERIALS.

a. <u>Test Substance</u>. The test substance, 4A2NT, was purchased from the Aldridge Chemical Co., Inc., 1001 W. Paul Ave., Milwaukee, Wisconsin. It was a rust colored powder with little, if any odor. It is listed in registry of toxic effects as CAS No. 119-32-4. One lot (07006BX) of 4A2NT 97 percent was received containing 2475 grams. A sample was analyzed by the Organic Environmental Chemistry Division, U.S. Army Environmental Hygiene Agency (USAEHA), using infrared spectroscopy and gas chromotography (GC). The analysis was a comparison of spectrum with literature and GC. the IR spectrum is similar to that reported by Aldridge with differences due to sampling techniques.

b. Animals. All studies were conducted using male and female Sprague-Dawley rats obtained from the Charles River Laboratories, Wilmington, Massachusetts. The animals were examined by the divisions' veterinarians and found to be in acceptable health. The male rats had a weight range of 198-231g and the female rats had a weight range of 127-176g. The animals were quarantined for a 1-week period. Drinking quality water and Purina Certified Rodent Chow 5002® were available ad libitum.

5. METHODS.

a. Acute Oral Toxicity. An approximate lethal dose (ALD) study was performed to determine the lethality occuring within 14 days following a single oral dose of a 4A2NT. The chemical was suspended in polyethylene glycol 200 (PEG 200) at a concentration of 800 mg/mL. Single oral graduated doses of 7500 mg/Kg, 500 mg/Kg, 3333 mg/Kg, 2222 mg/Kg, 1480 mg/Kg, and 987 mg/Kg were given by gavage to male and female rats. A 14-day observation period was used to observe death or clinical signs. Animals were weighed at 1, 3, 7, and 14-day intervals after exposure. All survivors were euthanized at 14 days and submitted for gross pathological examination. The ALD of the test substance is considered to be the lowest dose that causes death (with none living at higher doses and no deaths at lower doses) during the 14-day observation period.

b. 14-Day Feeding Study.

- (1) A 14-day range finding study was conducted in male and female rats in accordance with the Toxicology Division standing operating procedure (SOP) for 14- and 90-Day Feeding Studies (reference 1).
- (2) Forty-two male and forty-two female Sprague-Dawley rats 6 to 8 weeks old were used for this study. Following a 1-week acclimatization period, animals were randomly distributed (using the Labcat Randomization Program)* into seven dosage groups consisting of six male and six female rats each. Dosage levels were set at 0 ppm (control), 0 ppm (pair fed control), 125 ppm, 250 ppm, 500 ppm, 1000 ppm, and 2000 ppm. The pair fed control groups containing 0 ppm 4A2NT were started on study 1 week after the high level groups to assure that they received the same amount of feed as the 2000 ppm dosage level consumed in the previous week. A staggered start between males and females was also used to facilitate scheduling of necropsies.

[®]Purina is a registered trademark of Purina Mills, Inc., St. Louis, Missouri. Use of company names does not imply endorsement by the U.S. Army but is intended only to assist in identification of a specific product.

- (3) 4A2NT was ground (mortar and pestle) and mixed with ground rat chow weekly. The compound and feed were mixed for 25-30 min using a Hobart mixer. The mixtures were randomly sampled and independently verified for concentrations (ppm) weekly by GC electron capture detectors. The samples were extracted with acetonitrile, filtered and stored refrigerated until analyzed.
- (4) Body weights and feeder weights were observed and recorded on days 0, 1, 3, 7, and 14. Animals were observed daily for toxic signs. Water consumption was not monitored during this study.
- (5) Prior to necropsy on day 14, blood samples were collected by intracardiac puncture from all study rats. Clinical chemistry and hematology values were determined from all valid samples (Table 1).
- (6) Following the 14-day study period, the surviving rats were euthanized using carbon dioxide. The brain, liver, kidneys, spleen, and tested/ovaries were removed and weighed. These weights were used for calculations of organ-to-body weight and organ-to-brain weight ratios.
- (7) Food consumption, body weights, and weight gains were statistically compared using an analysis of variance and when significance was observed the data were further analyzed using a Duncan's post hoc test. Clinical chemistry values, hematology values, organ-to-body weight ratios, and organ-to-brain-weight ratios were statistically compared using an analysis of variance and a Newman-Kuels post hoc test.

c. 90-Day Study.

- (1) A 90-day feeding study was conducted in rats in accordance with the Toxicology Division SOP for 14- and 90-day studies (reference 1).
- (2) Rats were acclimatized for a 1-week period, then randomly distributed into 5 groups of 10 of each sex. Dose levels were set at 0, 500, 1000, 2000, and 0 ppm (pair fed) based on toxic effects and food consumption seen in the 14-day range finding study. A pair fed control group was included in the study to determine the effects of reduced food consumption in the high dose.

- (3) 4A2NT was ground (mortar and pestle) and mixed with ground rat chow weekly. The compound and feed were mixed for 25-30 min using a Hobart mixer. The mixtures were randomly sampled and independently verified for concentrations weekly. After mixing each dose level, compound and feed were refrigerated until needed. All food was discarded every Wednesday during the study. Food was added to the feed jars every Monday, Wednesday, and Friday.
- (4) Both sexes were started on test on the same Wednesday. The pair fed control groups were started 1 week after the high dose groups. The 1-week delay allowed a measure of the amount of feed the pair fed control groups received.
- (5) Body weights were recorded every week throughout the study. Feeder weights were recorded and feed consumptions were calculated every Monday, Wednesday, and Friday throughout the study. Observations of all animals for sighs of toxicity were made and recorded daily.
- (6) On the final day of the study (day 90 for male and day 91 for females), blood samples were collected by intracardiac puncture from all rats. All rats were euthanized with carbon dioxide and necropsied. Following examination of external surfaces and internal cavities, major organs were removed, trimmed, and weighed for organ-to-body-weight and organ-to-brain-weight ratio calculations. Other organs and tissues processed for microscopic examination included all gross lesions, brain, eye, pituitary, tongue, salivary gland, thymus, thyroid, parathyroid, trachea, esophagus, lungs, heart, liver, spleen, stomach, pancreas, lymph node, small and large intestines, adrenals, kidneys, urinary bladder, testes, prostate, ovaries, corpus and cervix uteri, skeletal muscle, fat, nerve, skin, fur, sections of sternebrae, vertebrae, and tibia-femoral joint with marrow.

6. RESULTS

a. Approximate Lethal Dose. The vehicle, PEG 200, had on apparent effect on toxicity. The earliest toxic effects appeared at 3 hours with deaths occurring between 21 hours and 42 hours after treatment. Deaths occurred in the 7500 mg/Kg and 5000 mg/Kg dose groups of both sexes. The male 3333 mg/Kg rat was determined to have died from improper gavage technique. Gross pathology at lethal doses showed multifocal hemorrhagic colitis, mild hemorrhage in the stomach and intestines, and multifocal hemorrhage and congestion of the lungs. No toxic signs were observed in surviving animals and gross pathology observations were unremarkable, though several of the surviving rats had mild congestion of the kidneys.

b. 14-Day Study.

- (1) All animals survived to the end of the study. The 2000 ppm exposure groups of both sexes showed statistically significant differences in food consumption, weight gain, body weights, body-to-brain weight ratios, liver-to-body weight ratios and hematology values compared to their respective control groups. The female 2000 ppm group had decreased hemoglobin, hematocrit and red blood cell counts indicating anemia. The testis-to-brain weight ratio showed a statistically significant higher value in the male 2000 ppm group compared to the male control group.
- (2) The adrenal-to-brain weight was statistically significantly higher in the female 2000 ppm group compared to the female control group. This data suggest a possible compound related effect in the 2000 ppm exposure groups of both sexes. In addition, the liver-to-body weight ratio showed a statistically significant higher value in the female 1000 ppm exposure group compared to the control group. The male 1000 ppm exposure group showed statistically significant lower food consumption compared to the control group. The lower food consumption in the female 2000 ppm group and the male 2000 ppm and male 1000 ppm groups may be due to possible unpalatability of the compound\food mixture (Appendices B through G).

c. 90-Day Study.

- (1) Appendix I shows the average dose (mg/Kg) received by each group for the 90-day study. The male 500 ppm group received approximately 27 mg/Kg/day, with the females receiving 32 mg/Kg/day. The male 1000 ppm group received 52 mg/Kg/day, with the females receiving 65 mg/Kg day. The male 200 ppm group received 115 mg/Kg/day and the females received 138 mg/Kg/day.
- (2) The male 115 mg/Kg/day group and the female 138 mg/Kg/day group showed statistically significant differences in food consumption, body weights, weight gains, clinical chemistry values, hematology values, liver-to-bodyweight ratios, and liver-to-brain weight ratios. The male 115 mg/Kg/day group and the female 138 mg/Kg/day group had decreased hemoglobin values, hematocrit values and red blood cell counts which indicated anemia. The testis-to-brain weight ration and the spleen-to-brain weight compared to the control group. The adrenal-to-brain weight ratio in the female 138 mg/Kg/day group was significantly lower compared to the control group.
- (3) The male 52 mg/Kg/day group and the female 65 mg/Kg/day groups showed statistically significant differences in food consumption, weight gain, hematology values, liver-to-body weight ratios, and liver-to-brain weight ratios.

- (4) The male 27 mg/Kg/day group showed statistically significant diminished weight gain, higher liver-to-body weight ratios and higher liver-to-brain weight ratios compared to the control group. The female 32 mg/Kg/day group showed no statistically significant differences from the female control group (Appendices H through N).
- (5) All animals survived to the end of the 90-day study. At necropsy all the male 115 mg/Kg/day animals had yellow stained pelts, pale livers and minimal body fat. Eight of ten female 138 mg/Kg/day animals had yellow stained pelts at necropsy.
- (6) Histopathological examination of tissues and organs taken at necropsy showed that males from the 52 mg/Kg/day and 115 mg/Kg/day groups had a moderate to high incidence of testicular hypospermatogenesis (atrophy). Epididymides of affected testes often showed hypospermia (reduced content of maturing sperm). Testes of two additional males for the 53 mg/Kg/day group had a mild dilitation of seminiferous tubules. The incidence pattern of testicular hypospermatogenesis and epididymal hypospermia were associated with the administration of the test material.
- (7) All test groups except the pair fed groups, had a high incidence of cytoplasmic vacuolization of hepatocytes. The vacuolization was more pronounced in the treated males to a lesser extent in the treated females than in the control groups. The change consisted of indistinctly bound cytoplasmic vacuoles, morphologically similar to postprandial glycogen and fat accumulation. In some rats, the vacuolization was more prominent in the periportal region, while in others the change was distributed throughout the liver. The increased severity of vacuolization in the treated groups suggest compound related accentuation of the change.
- (8) Males from the 115 mg/Kg/day and 52 mg/Kg/day groups and females from the 138 mg/Kg/day group had a low incidence of trace-level subacute inflammation in the liver. The lesion consisted of infiltration of lymphocytes and a few neutrophils around biliary tracts. The lesion was judged to be of little clinical significance but, coupled with the vacuolization of hepatocytes, was interpreted by the pathologist as evidence of mild hepatotoxicity.
- (9) Males from the 115 mg/Kg/day group had a high incidence of cardiomyopathy. The lesion consisted of focal or multifocal degeneration of cardiac myofibers, often with a concurrent infiltration of lymphocytes and proliferation of Anitschkoow myocytes. One male from the 52 mg/Kg/day group showed a similar lesion. The severity and incidence pattern suggest an association with the compound administration in males.
- (10) All other lesions are considered to be incidental findings or part of spontaneous disease complexes of laboratory rats.

7. CONCLUSIONS.

a. The conclusion from the Acute Oral Toxicity study follows:

The oral ALD for 4A2NT in both sexes was 5000 mg/Kg.

b. The conclusions for the 14-day study follows:

The data collected in this study suggest a probable compound related effect in the 2000 ppm exposure groups of both sexes. Anemia was evident in the female 2000 ppm exposure group. This statistically significant liver-to-body weight ratio data, suggest a possible compound related effect in the 100 ppm group of both sexes. Based on this study, the 2000 ppm dose group was determined to be the high exposure group for the 90-day study.

c. The conclusions from the 90-day study follows:

This regimen of 4A2NT was associated with testicular hypospermatogenesis (atrophy) and associated depletion of spermatozoa in the epidiymides of rats from the 115 mg/Kg/day and 52 mg/Kg/day dosage groups. Males from the 115 mg/Kg/day dose group had a high incidence of cardiomyopathy that was more severe than that commonly seen in male rats of this age, suggesting a compound-related accentuation of a spontaneous disease process. Male 115 mg/Kg/day and female 138 mg/Kg/day groups had anemia. All groups except the pair fed groups, including the control group, had a high incidence of hepatocellular cytoplasmic vacuolization. The severity of the hepatocellular vacuolization, particularly in males, was associated with the dosage of 4A2NT, suggesting administration of the test material resulted in hepatocellular changes that were morphologically similar to postprandial accumulation of glycogen and fat.

d. Based on this study, a NOAEL was not established. The lowest-observed-adverse-effect-level for this 90-day study is 27 mg/Kg/day for males and 32 mg/Kg/day for females .

JOHN C. HOUPT

Biologist

Toxicology Division

APPROVED:

MAURICE H. WEEKS Chief, Toxicology Division

APPENDIX A

REFERENCE

1. Standing Operating Procedure No. 37, USAEHA, Toxicology Division, February 1991, 14-Day Range Finding and 90-Day Feeding Study in Rats.

APPENDIX B

	· ·	SUMMA	RY OF D	AILY MEA	N FOOD CO	NSUMPTI	ON (Grams)	· · ·		
	s	TUDY: YJ81M	[-		SEX:	MALE		PAGE:	1	
	DOSE:(ppm)	0	0	125	250	500	1000	2000		
PERIOD	GROUP:	1-M.	2-M	3-M	4-M		. 6-M	7-M	٠	
DAY 1	INTAKE (g)	23**	24 **	24**	24 **	24**	21** B	18 ^{AE}	3	
	S.D.	1.9	2.8	1.3	2.1	1.9	1.8	2.4		
	EFF. (g/kg)	98	88	103	103	107	97	81		
	N	6	6	6	6	6	6	6		
DAY 2	INTAKE (g)		15							
* -	S.D.	0.0	2.6	0.0	0.0	0.0	0.0	0.0		
	EFF. (g/kg)		:- -,							
	N	0	6 34/2	0 2 = 17	0	0	0	0		
DAY 3	INTAKE (g)	24** B	19 ^A	25**B	24** B	23** B	22** AB	19**A		•
	S.D.	2.1	0.0	2.0	1.4	1.0	2.4	1.7		
	Eff. (g/kg)	101	72	102	98	100	96	83	٠.	
	N .	6	,6	6	6	6	6	6		
DAY 6	INTAKE (g)	26** B	18 A:	27**B	25**B	25** B	23** B	20**	A	
	S.D.	2.6	2.9	2.3	2.2	1.8	1.6	2.4		
	EFF. (g/kg)							·		
÷	N	6	6	6	6.	- 6	6	6		÷
DAY 7	INTAKE (g) .	24**B	19** A	25**B	24**B	24** B	_{21**} B	18	•	
	S.D.	1.0	0.0	1.0	1.5	1.2	3.0	2.3		
	EFF. (g/kg)	95	71	99	9 5	95	89	77	:	
	N	6	6	6	6	6	6	. 6		٠
DAY 8	INTAKE (g)		19				-			
	S.D.	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	EFF. (g/kg)				· .					
	N ·	0	6	0	0	. 0	0	0		
DAY 9	INTAKE (g)	26**		27**	26**	25 **	23 A	20 A		
	S.D.	2.0	0.0	1.8	1.8	1.0	2.2	2.1		
	EFF. (g/kg)							e. I		
:	N	6	0	6	6	6	6	6		
DAY 10	INTAKE (g)	27 * B	19 ^A	28 *B	27 * B	27 ★ B	₂₅ AB	19Å		
	S.D.	1.7	0.4	0.8	1.8	1.3	. 2.9	2.2		
	EFF. (g/kg)		**							
	N .	. 6	6	6	6	6	6	. 6		
			Ī.	-	~	•	Ü	, 0		

P less than .05

Analysis of Variance using DUNCAN'S Procedure

P Less than .01

A - Significance with control group (1-M) B - Significance with pair fed group (2-M) $^{\circ}$

		SUMMARY OF DAILY MEAN FOOD CONSUMPTION (Grams)										
	STU	TUDY: YJ81M			SEX: MALE			PAGE: 2				
PERIOD	DOSE: (ppm) GROUP:	0 1-M	0 2-M	125 3-H	250 4-M	500 5-M	1000 6-M	2000 7-M				
												
DAY 12	INTAKE (g)	·	19		 .							
	S.D.	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
	EFF. (g/kg)		. 									
	N	0	6	0	0	0	. 0	0				
DAY 13	INTAKE (g)	27 **	19 Å	27** B	26**B	26** B	23** AB	18 <u>A</u>				
	S.D.	2.4	0.4	2.3	2.1	1.4	2.0	1.9				
	EFF. (g/kg)											
- 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	N	6	6	6	6	6	6	6				
DAY 14	INTAKE (g)	. 27 * *	19 A	28** B	25**B	25** B	22**	19 A				
	S.D.	6.9	0.0	2.7	1.8	2.1	1.5	4.5				
	EFF (g/kg)	95	69	98	91	91	87	74				
	И.	6	6	6	6	6	6	6				

P less than .05

Analysis of Variance using DUNCAN'S Procedure

P less than .01

⁼ Data Unavailable

A - Significance with control group (1-M) B - Significance with pair fed group (2-M)

			ARY OF D	· 					
	ST	UDY: YJ81	14F		SEX	FEMALE		PAGE: 1	
	00SE: (ppm)	0	125	250	500	1000	2000	.0	
PERIOD	GROUP:	1-F	2-F	3-F	4-F	5-F	6-F	7-F	
	· .								, , , , , , , , , , , , , , , , , , ,
DAY 1	INTAKE (g)	17** B	16**	17** B	16** B	17**B	11A	13** A	
	S.D.	2.2	5.0	2.1	8.0	2.9	1.9	0.4	
	EFF. (g/kg)	91	83	89	86	88	58	65	
	И	6.	6	6	6	6	6	. 6	
DAY 3	INTAKE (g)	19** B	19**B	19** B	18** B	19**B	13** A	13 A	
	S.D.	0.6	1.7	1.4	1.5	2.5	2.3	0.0	
	Eff. (g/kg)	98	98	95	92	99	71	65	
	N	6	6	6	6	6	6	. 6	÷
DAY 5	INTAKE (g)							13	
DAT >	S.D.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	EFF. (g/kg)		0.0	•	0.0				•
	N (g) kg)	0	0	, 0	0	0	 0	·6	
		·	U	U	U	U	U	U	
DAY 6	INTAKE (g)	20** B	19** B	19** B	18** B	19**B	14** A	13 A	
- *	S.D.	4.4	2.8	1.5	1.5	1.9	1.3	0.0	
	EFF (g/kg)							- -	
	N .	6	6	6	6	6	. 6	6 -	
DAY 7	INTAKE (g)	18 * ★B	17**B	17** B	16**B	16** B	13A	13**A	
	S.D.	1.8	2.4	1.5	2.6	2.1	1.8	0.0	
	EFF. (g/kg)	90	87	84	82	83	67	65	
	N	6	6	6	6	6	6	6	
		•		Ü	Ü	J	• ,	Ŭ	
DAY 8	INTAKE (g)	18 **	20**	18 **	18 **	19**	14A		
	S.D.	2.1	4.3	0.8	1.8	2.6	2.5	0.0	
	EFF. (g/kg)								
	N	6 .	6	. 6	6	6	6	0	
DAY 9.	INTAKE (g)	***						15	-
	S.D.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	EFF. (g/kg)								
	. N	0	0	0	0	0	0	6	
	INTAKE (g)	19**B	20** B	21** B	19**B	20** B	16 * ∗ A	14 A	
DAY 10	S.D.	1.3	1.9						
		1.3	1.9	3.5	1.7 	1.8	1.0	0.0	•
	EFF. (g/kg)					<u></u>	 4		
•	N	6	6	6	6	6	6	. 6	

^{*} P less than .05

Analysis of Variance using DUNCAN'S Procedure

^{**} P less than .01

^{-- =} Data Unavailable

A - Significance with control group (1-F)

B - Significance with pair fed group (7-F)

-		SUMMA	RY OF DA	ILY MEAN	FOOD C	ONSUMPTI	ON (Grams)) . 	
	STUD	Y: YJ811	4F		SEX	: FEMALE		PAGE: 2	
PERIOD			125 2-f	250 3-F		1000 5-F	2000 6-F	0 7-F	
	· · · · · · · · · · · · · · · · · · ·	·			_ 			15	
AY 12	INTAKE (g) S.D.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	EFF. (g/kg)	u.u 	0.0	0.0					
, e	N (g) (g)	0	0	O	0	0	0	6	
AY 13	INTÁKE (g)	19** B	19** B	19** B	19** B	19**B	14A	14 A	
	S.D.	1.9	3.1	2.0	1.3	1.5	1.0	0.0	
	EFF. (g/kg)					 .		-	
•	N	6	6	6	6	6	6	6	
AY 14	INTAKE (g)	19** B	20**B	19** B	18 ** B	19** B	15▲	14 A	
*.	S.D.	2.1	1.8	0.8	2.5	1.6	1.9	0.4	
	EFF. (g/kg)	91	95	92	86	91	78	69	
	N	6	6	6	6	6	6	6	

^{*} P less than .05

Analysis of Variance using DUNCAN'S Procedure

^{**} P less than .01

^{-- =} Data Unavailable

A - Significance with control group (1-F)

B - Significance with pair fed group (7-F)

APPENDIX C

			SUMMAR	Y OF BOD	Y WEIGHT	CS (Grams)			
gg gyagg, gya din kirk kirk kir dir dir dir en en en	STU	DY: YJ81M		SEX: MALE				PAGE: 1	
	DOSE: (pp	m) O (m	0	125	250	500	1000	2000	
PERIOD	GROUP:	1-H	2-H	3-M	4-M	5-M	6-M	7-M .	
DAY O	MEAN	232** ^B	268** ^A	230** B	230** B	B 224**	217 ^B	B 224**	
	S.D.		14.3		20.9	12.0	20.6	18.2	
	N	6	6	6	6	6	6	6	
				•					
DAY 1.	MEAN	234** B	277** ^A	235**B	236** B	231** B	222 B	223B	
	S.D.	14.6	14.6	10.3	21.4	12.3	19.7	15.1	
	N	6	. 6	.6	6	6	6	6	
_									
DAY 3	MEAN	249	261	249	248	244	236	234	
	S.D.	14.9	10.5	10.2	20.3	12.4	21.4	15.4	
	N	6	6	6	6	6;	6	6	
DAY 7	MEAN	278	271	281	274	272	260	253	
VALI	S.D.	15.8	13.1	13.9	20.2	11.3	24.4	13.8	-
	N	6	6	. 6	6	6	6	6	
•		Ū		Ü	Ŭ	<u> </u>		-	
DAY 14	MEAN	322** B	284**A	330**B	317** B	.314** B	298**	275A	
	S.D.	21.8	13.2	15.3	20.9	10.1	26.7	20.0	
	N	6	. 6	6	6	6	6	6	

P less than .05

Analysis of Variance using DUNCAN'S Procedure

P Less than .01

A - Significance with control group (1-M) B - Significance with pair fed group (2-M) $^{\circ}$

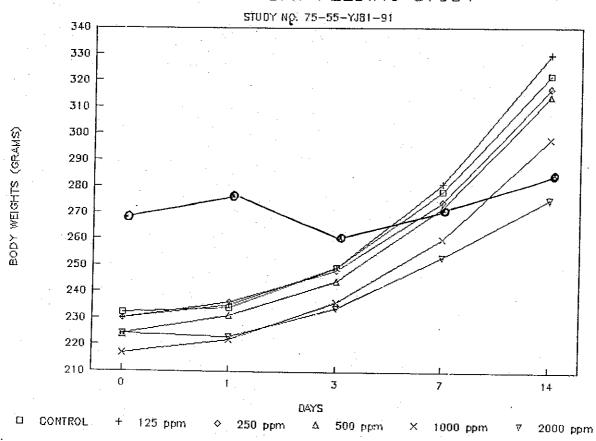
	SUMMARY OF BODY WEIGHTS (Grams)											
	STUDY	: YJ811	4F		SEX	: FEMALE		PAGE:	1			
	DOSE: (ppm)	. 0	125	250	500	1000	2000	0				
PERIOD		1-F	2-F	3-F	4-F	5-F	6-F	7-F				
DAY O	MEAN	189	187	191	189	188	183	207				
	S.D.	15.1	12.8	15.3	15.5	16.5	13.1	14.6				
	N	6	6	6	6	6	6	. 6				
DAY 1	MEAN	193	188	193	190	187	180	202				
	S.D.	15.1	15.9	13.5	14.7	18.3	16.2	14.3				
	N	6	6	6	. 6	6	6	. 6				
DAY 3	MEAN	198	196	198	197	193	185	192	*			
UAT 5	S.D.	15.9	16.4	16.4	16.9	17.9	17.1	13.7				
	N.	6	6	6	6	6	6	6				
DAY 7	MEAN	209	206	209	207	205	196	195				
, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	S.D.	18.2	18.2	16.7	13.4	19.9	15.8	13.5				
	N ·	6	6	6	6	6	. 6	6				
DAY 14	MEAN	227**	225**	230**	223**	222**	201	203				
	S.D.	19.8	19.9	17.9	15.9	19.6	15.4	11.8				
	N	6	6	6	6	6	6	6				

^{*} P Less than .05

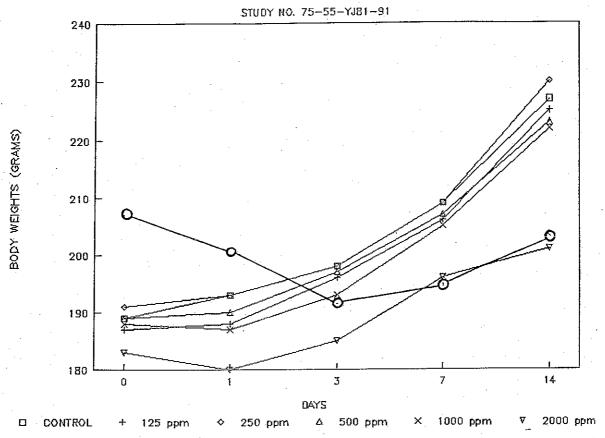
Analysis of Variance using DUNCAN'S Procedure

^{**} Pless than .01

MALE 14-DAY FEEDING STUDY



FEMALE 14-DAY FEEDING STUDY



APPENDIX D

		5	UMMARY	OF DAILY	WEIGHT	GAINS (Gra	ims)	,	
	STUDY:	YJ8114	F		SEX:	FEMALE		PAGE: 1	٠.
	DOSE: (ppm)	0	125	250	500	1000	2000	0	
PERIOD	GROUP:			3-F	4-F	5-F	6-F	7-F	
		D	D	Т.	n	. ATD	A		
DAY 1	MEAN		1** B			-1 ★ AB			
	S.D.	2.9	5.0	2.6	3.2	3.6		1.6	
	N	6	6	6	6	6	6	6	
DAY 3	MEAN	3** B	4**B	3**B	4** B	4** B	3 * ∗ B	-5 A	
	S.D.	1.7	0.8	1.9	1.2	0.5	2.1	1.5	
	N ·	6	6	6	6	6	6 .	6	
DAY 7	MEAN	3** B	3** ^B	3* ★ B	3** B	3** B	3**B	1 A	
	S.D.	1.0		0.6	1.8	0.6	1.2	0.4	
	N	6	. 6	. 6	6	6	6	6	
DAY 14	MEAN	3** B	3** ^B	3** B	2** B	3**B	1 A	1 A	•
	S.D.	0.5	1.0	0.4	0.5	0.5	0.5	0.4	
	N	6	6	6	6	6.	6	. 6	

P Less than .05

Analysis of Variance using DUNCAN'S Procedure

P less than .01

A - Significance with control group (1-F) B - Significance with pair fed group (7-F)

		•	SUMMARY	OF DAILY	WEIGHT	GAINS (Gra	ms)	
	STUDY	: YJ81N	1		SEX:	MALE	I	PAGE: 1
	DOSE: (ppm)		0	125	250	500	1000	2000
PERIOD	• •	1-M	2-K	3-M	4-M	5-H:	6-M	7-H
						:		
DAY 1	MEAN	2 B	9** A	5** B	6**A	7** A	5** B	-1 B
PAT 1	S.D.	4.9	1.9	1.5	2.2	1.2	2.1	4.0
•	N	6	6	. 6	6	6	6	6
DAY 3	MEAN	8 ** B	A 8-	8** B	6**B	7** B	7 * * B	5**AB
	S.D.	1.0	3.6	0.8	1.7	0.8	1.1	1.0
	N	6	6	6	6	6	6	6
DAY 7	MEAN	7**B	zΑ	. 8** B	7 * *B	7** B	6** B	5**AB
in .	S.D.	0.8	1.4	1.3	1.0	0.8	1.5	1.5
	N	6	6	6	6	6	6	. 6
DAY 14	MEAN	6**B	2 A	7** B	6**B	6 * * B	6** B	3 *A
****	S.D.	1.1	0.4	0.6	0.5	0.6	8.0	1.7
•	N	- 6	6	6	6	6	6	6

^{*} P less than .05

Analysis of Variance using DUNCAN'S Procedure

^{**} P Less than .01

A - Significance with control group (1-M) B - Significance with pair fed group (2-M)

APPENDIX E

CLINICAL CHEMISTRY
14-DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
FEMALE

•				•		TOTAL	•
	GROUP #		BUN	TRIG	CHOL	PROTEIN	CALCIUM
Оррш	1	mean	24.8	227.3	73.95	7.32	10.18
		std	1.61	63.9	15.2	0.542	0.564
	•	sem	0.608522	24.15192	5.745059	0.204856	0.213171
125ppm	2	mean	24.8 B	221.5 в	84.5	7.03 B	10.15
		std	1.23	41.3	10.7	0.314	0.558
		sem	0.464896	15.60993	4.044219	0.118680	0.210904
250ppm	3	mean	27.2 В	281.2 B	94.2	7.08 B	10.03
	* * * * * * * * * * * * * * * * * * * *	std	4.4	27.1	14.2	0.299	0.656
	ŕ	sem	1.663043	10.24283	5.367095	0.113011	0.247944
500ppm	4	mean	27.6 B	250.3 в	87.7	7.38 B	10.48
		std	1.69	61.5	7.88	0.293	0.4916
		sem	0.638759	23.24481	2.978360	0.110743	0.185807
1000ррт	5	mean	21.48 В	183.3	90.46	6.7 A	10.05 B
		std	3.98	30.3	16.52	0.268	0.281
		sem	1.504298	11.45232	6.243973	0.101294	0.106208
2000ppm	6	mean	21.73 в	203.8	96.4	6.35 A	9.97 B
	- .	std	2.11	19.5	13.26	0.362	0.535
		sem	0.797505	7.370307	5.011808	0.136823	0.202210
* Орри	7	mean .	15.7 A	145.3 A	74.05	6.43 A	10.92 A
-Fr		std	2.37	44.7	10.5	0.463	0.402
		sem	0.895775	16.89501	3.968626	0.174997	0.151941

^{*-} RESTRICTED DIET GROUP

A- SIGNIFICANCE FROM GROUP 1

p= 0.05

B- SIGNIFICANCE WITH GROUP 7 (RESTRICTED DIET)

p = 0.05

CLINICAL CHEMISTRY
14-DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
FEMALE

	GROUP #		ALKPHOS	SGOT	SGPT
Орря	1	mean	386	111.3	47.9
		std	120.4	14.9	6.17
		sem	45.50692	5 631670	2.332040
125ppm	2	mean	357.7	104.7	42.48
		std	98.2	35.9	9.02
		sem	37.11611	13.56892	3.409239
250ppm	3	mean	349	102	41.87
		std	118.3	17.5	8.51
		sem	44.71319	6.614378	3.216477
500ppm	4	mean	352.7	107	39.55
		std	127.1	13.8	10.24
		sem	48.03928	5.215909	3.870356
1000ppm	5	mean	319.3	122.2	40.58
		std	74.3	37	2.85
		sem	28.08276	13.98468	1.077198
2000ppm	6	mean	358.2	104	36.82
		std	72.6	24.8	4.57
		sem	27.44022	9.373518	1.727297
* Оррт	7	mean	230.3	126.9	34.47
		std	88.7	108.8	4.83
		sem	33.52544	41.12253	1.825568

^{* *-} RESTRICTED DIET GROUP

A- SIGNIFICANCE FROM GROUP 1

p= 0.05

B- SIGNIFICANCE WITH GROUP 7 (RESTRICTED DIET)

p= 0.05

CLINICAL CHEMISTRY
14-DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
MALE

		•				Tok.	
	GROUP #		BUN	TRIG	CHOL	PROTEIN	CALCIUM
			•				
Оррт	1	mean	17.5	335.5	65.3	6.65	10.4
.,		std	1.9	57.4	7.6	0.3	1
		sem	0.718132	21.69516	2.872529	0.113389	0.377964
125ppm	2	mean	18	385.7 B	62.8	6.6	10.6
		std	4	112.5	8.8	0.28	0.16
		sem .	1.511857	42.52100	3.326087	0.105830	0.060474
250ppm	3	mean	-18	348.7 B	63.5	6.32	10.6
		std	1.9	69	7.7	0.4	0.65
		sem	0.718132	26.07954	2.910326	0.151185	0.245676
500pp#	4	mean	17	334. 5 B	76.1	6.28	10.2
		std	2.5	139.4	5	· 0.5	0.28
		sem	0.944911	52.68824	1.889822	0.188982	0.105830
1000ppm	5	mean	15.5	256	88.5 A	6.11	10.1
		std	1.7	61.7	16.7	0.33	0.48
		sem	0.642539	23.32040	6.312006	0.124728	0.181422
2000ppm	6	mean	20.1	320.4 B	87 A	5.84 AB	10.4
		std	3	70	15.3	0.7	0.53
•		sem	1.133893	26.45751	5.782856	0.264575	0.200321
≭ Оррш	7	mean	16.2	169.5 A	73.9	6.78	9.5
• •		std	1.6	42.5	11.3	0.19	0.61
		sem	0.604743	16.06349	4.270998	0.071813	0.230558

^{*-} RESTRICTED DIET GROUP

P= 0.05

P= 0.05

A- SIGNIFICANCE FROM GROUP 1

B- SIGNIFICANCE WITH GROUP 7 (RESTRICTED DIET)

CLINICAL CHEMISTRY
14-DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
MALE

	GROUP	# .	ALKPHOS	SGOT	SGPT	BILI	GLU
	. 1	mean	602.2	90	38.8	0.433	153.7
Oppm		std	117.1	18.1	5.1	0.12	16.7
		sem.	44 25963	6.841156	1.927618	0.045355	6.312006
			51/ 7 D	91.5	39	0.567	160.2 B
125ppm	2	mean	514.3 B	32.2	3.3	0.1	13.4
		std sem	213.7 80.77100	12.17045	1.247282	0.037796	5.064723
0.0	3		568.3 B	127.2	37.7	0.533	159.8 В
250ppm	3	mean std	88.2	72.5	7.3	0.14	16.3
		sta sem	33.33646	27.40242	2.759140	0.052915	6.160820
-				•		i i	
500ppm	4	mean	491 B	161_8	41.6	0.5	160.5 B
••		std	104.9	145.2	8.5	0.21	20.9
		sem	39.64847	54.88044	3.212698	0.079372	7.899457
1000ppm	5	mean	469.7 B	122.5	40.5	0.3833	179 B
Todoppii		std	118.3	93	7.3	0.15	27.8
		sem	44.71319	35 15069	2.759140	0.056694	10.50741
2000ppm	. 6	mean	486.4 B	114.6	34.4	0.298	132.8
- Zoooppiii	•	std	215.3	59.5	3.7	0.41	12.2
		sem	81.37575	22.48888	1.398468	0.154965	4.611166
±0		maar	164.5 A	108.1	36.4	0.35	120.1 A
*0ppm	7	mean	60.9	17	6.6	0.054	16.5
		std sem	23.01803	6.425396	2.494565	0.020410	6.236413

^{*-} RESTRICTED DIET GROUP

A- SIGNIFICANCE FROM GROUP 1

P= 0.05

B- SIGNIFICANCE WITH GROUP 7 (RESTRICTED DIET)

₽= 0.05

APPENDIX F

HEMATOLOGY
14-DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
MALE

				The state of the s			
	GROUP	#	HGB	MCV	PLT	мсн	нст :
				•			-
Орра	1	mean	14.4	61.7	1028	22.27	39.9
		std	0.74	2.08	349	0.77	3.23
•		sem	0.279693	0.786166	131.9096	0.291032	1.220825
125ppm	2	mean	14.9 B	61.3 B	1248	22.27	41. B
		std	0.43	2.91	117.2	0.98	1.45
•		sem	0.162524	1.099876	44.29743	0.370405	0.548048
250ppm	3.	mean	14.8 B	61.1 B	1033	21.58	41.9 B
		std	0.69	2.21	271	1.55	1.61
		sem	0.260795	0.835301	102,4283	0.585844	0.608522
500ppm	4	mean	15 в	60.5 B	1300	21.85	41.3 B
		std	0.91	2.34	131	0.78	2.16
,		sem	0.343947	0.884436	49.51334	0.294812	0.816403
1000ppm	. 5	mean	15 B	60.1 B	1347	21.62	41.7 B
		std	0.41	1.94	328.9	0.7	1.53
		sem	0.154965	0.733251	124.3125	0.264575	0.578285
2000ppm	6	mean	14.8 B	60.5 B	1588 AB	21.5	41.7
		stď	0.27	1.91	193.4	0.65	1.06
		sem	0.102050	0.721912	73.09832	0.245676	0.400642
* Оррп	7	mean	16.1 A	57.1 A	1081.7	20.62	44.5 A
		std	0.48	1.66	178.9	0.54	· 1.11
		sem	0.181422	0.627421	67.61784	0.204100	0.419540
							and the second s

^{*-} RESTRICTED DIET GROUP

A- SIGNIFICANCE FROM GROUP 1

P= 0.05

P= 0.05

B- SIGNIFICANCE WITHD GROUP 7 (RESTRICTED DIET)

HEMATOLOGY
14-DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
MALE

	GROUP #		RBC	WBC .	мснс
	4		6.47	12.23	36.12
0ppm	1	mean	0.46	5.69	1,81
•		std	0.46	2.150617	0.684115
		sem	0.113003	2.150011	0,004112
125ppm	2	mean	6.7 B	12.67	36.32
P.P.	_	std	0.21	3.32	0.5
		sem	0.079372	1.254842	0.188982
250pp®	3	mean	6.87 B	12.7	35.33
zsopp		std	0.43	2.06	2.25
	•	sem	0.162524	0.778606	0.850420
500ppm	4	mean	6.83 B	12.85	36.13
		std	0.55	4.52	0.4
		sem	0.207880	1.708399	0.151185
1000ppm	5	mean	6.95 B	12.32	35.98
recepp	•	std	0.38	1.95	0.55
		sem	0.143626	0.737030	0.207880
2000ppm	6	mean	6.9 B	16.62 B	35.58
	·	std	0.24	4.19	0.56
		sem	0.090711	1.583671	0.211660
*0ppm	7	mean	7.8 A	7.55 A	36.13
oppm	•	std	0.36	2.36	0.25
		sem	0.136067	0.891996	0.094491

*- RESTRICTED DIET GROUP

A- SIGNIFICANCE FROM GROUP 1

P= 0.05

8- SIGNIFICANCE WITH GROUP 7 (RESTRICTED DIET)

P = 0.05

HEMATOLOGY
14-DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
FEMALE

	GROUP #		HGB	MCV	PLT	MCH	нст
Оррт	1	mean	15.2	56.67	1153	20.25	42.55
		std	0.335	1.7	91.4	0.737	1.42
		sem	0.126618	0.642539	34.54595	0.278559	0.536709
125ppm	2	mean	14.9	55.87	1073	20	41.7
		std	0.46	1.06	108.2	0.446	1.37
		sem	0.173863	0.400642	40.89575	0.168572	0.517811
250ppm	. 3	mean	15.22	56.3	1158	20.4	41.95
• • •		std	0.662	0.827	237.5	0.472	2.33
	•	sem	0.250212	0.312576	89.76656	0.178399	0.880657
500ppm	4	mean	14.92	57.017	1161.7	20.75	41
		std	0.668	1.47	83	0.782	2.05
		sem	0.252480	0.555607	31.37105	0.295568	0.774827
1000ppm	5	mean	14.68	57.5 B	1131.7	20.78	40.6
		std	0.426	1.17	298	0.264	1.5
		sem	0.161012	0.442218	112.6334	0.099782	0.566946
2000ppm	6	mean	12.65 AB	56.75	1423 B	20.08	35.72 AB
		std	0.561	1.51	162.8	0.553	1.46
		sem	0.212038	0.570726	61.53261	0.209014	0.551828
*Oppm	7. 7	mean	15.13	55.18	811.7	19.87	42.05
		std	0.489	0.462	582.7	0.175	1.63
•		sem	0.184824	0.174619	220.2398	0.066143	0.616082

^{*-} RESTRICTED DIET GROUP

A- SIGNIFICANCE FROM GROUP 1

p≈ 0.05

B- SIGNIFICANCE WITH GROUP 7 (RESTRICTED DIET)

p= 0.05

HEMATOLOGY
14-DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
FEMALE

	GROUP #		RBC	WBC	мснс
Оррт	1	mean	7.52	12.2	35.73
		std	0.376	3.41	0.488
		sem	0.142114	1.288858	0.184446
	_		7 (7	44 (2)	35.57
125ppm	2	mean	7.47	11.42	0.535
		std	0.225	3.2	
		sem	0.085042	1,209486	0.202210
250ppm	3	mean	7.45	13.17	36.3
Soppin	,	std	0.404	6.26	0.576
		sem	0.152697	2.366057	0.217707
	٠			·	
500ppm	4	mean	7.2	9.78	36.4
		std	0.424	4.96	0.837
	•	sem	0.160256	1.874703	0.316356
1000ррт	. 5	mean	7.07	12.35	36.15
		std	0.197	1.31	0.451
		sem	0.074459	0.495133.	0.170461
2000ppm	6	mean	6.3	AB 17.55 B	32.07
		std	0.29	4.32	8.17
		sem	0.109609	1.632806	3.087969
*Oppm	. 7	mean	7.62	7.7	36
oppm		std	0.279	1.5	0.438
		sem	0.105452	0.566946	0.165548

^{*-} RESTRICTED DIET GROUP

A- SIGNIFICANCE FROM GROUP 1

p≃ 0.05

B- SIGNIFICANCE WITH GROUP 7 (RESTRICTED DIET)

p= 0.05

APPENDIX G

ORGAN TO BRAIN WEIGHT RATIO
14-DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
MALE

•		-	TESTES	SPLEEN	LIVER	KIDNEY	ADRENAL
	GROUP #	#	BRAIN	BRAIN	BRAIN	BRAIN	BRAIN
					•		
Oppm	1	mean	1.54	0.334	8.03	1.46	0.0302
	•	std	0.0373	0.057	0.874	0.191	0.003458
		sem	0.014098	0.021543	0.330340	0.072191	0.001307
	_						
125ррт	2	mean	1.51	0.342	8.89 B	1.51 B	0.0336
1		std	0.0925	0.0302	0.942	0.071	0.01898
		sem	0.034961	0.011414	0.356042	0.026835	0.007173
250ppm	3	mean	1.58	0.363	8.305 B	1.4	0.03037
		std	0.126	0.0427	0.438	0.161	0.004975
	•	sem	0.047623	0.016139	0.165548	0.060852	0.001880
E00	4		1 57	0.740	0.70 B	1.49 B	0.07/75
500ppm	4	mean	1.53	0.368	8.79 B		0.03435
		std	0.16	0.0527	0.96	0.13	0.0107
		sem	0.060474	0.019918	0.362845	0.049135	0.004044
1000ppm	5	mean	1.49	0.328	8.21 B	1.33	0.0308
		std	0.155	0.0567	0.704	0.128	0.002419
		sem	0.058584	0.021430	0.266086	0.048379	0.000914
2000ppm	. 6	mean	2.42 AB	0.342	7.7 B	1.28	0.034087
Zooopp		std	0.262	0.055	0.791	0.0825	0.007975
		sem	0.099026	0.020788	0.298969	0.031182	0.003014
40	7		4.65	0.00		4.25	0.04/20/
*0ppm	7	mean	1.61	0.29	5.43 A	1.25	0.046296
		std	0.109	0.029	0.684	0.104	0.018056
•		sem	0.041198	0.010960	0.258527	0.039308	0.006824

^{*-} RESTRICTED DIET GROUP

A- SIGNIFICANCE FROM GROUP 1

P= 0.05

B- SIGNIFICANCE WITH GROUP 7 (RESTRICTED DIET)

P= 0.05

ORGAN TO BRAIN WEIGHT RATIO
14-DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
FEMALE

	- · · · · · · ·		OVARIES	SPLEEN	LIVER BRAIN	KIDNEY BRAIN	ADRENAL BRAIN
	GROUP #		BRAIN	BRAIN .	DATH		2
Oppm	1	mean	0.079588	0.2746	5.158 B	1.04	0.05097
Оррш		std	0.010213	0.03167	0.54	0.0563	0.0118
		sem	0.003860	0.011970	0.204100	0,021279	0.004459
125ppm	2	mean	0.076051	0.2699	5.354 B	1.001	0.04583
		std	0.01288	0.03798	0.186	0.113	0.00442
	÷	sem	0.004868	0.014355	0.070301	0.042709	0.001670
250ppm	. 3	mean	0.080143	0.2508	5.523 B	1.001	0.0437
csopp		std	0.016727	0.0569	0.5	0.0725	0.00744
	•	sem	0.006322	0.021506	0.188982	0.027402	0.002812
500ppm	4	mean	0.073178	0.2648	5.393 B	0.989	0.044
20015111		std	0.008063	0.0314	0.621	0.078	0.00628
		sem	0.003047	0.011868	0.234715	0.029481	0.002373
1000ppm	5	mean	0.073746	0.2958	5.813 B	0.983	0.0426
		std	0.018866	0.0494	0.697	0.0773	0.00434
		sem	0.007130	0.018671	0.263441	0.029216	0.001640
2000ppm	6	mean	0.06983	0.3111 B	5.313 B	0.924	0.0348 A
		std	0.009685	0.0403	0.495	0.0828	0.0103
	•	sem	0.003660	0.015231	0.187092	0.031295	0.003893
*Oppm	7	mean	0.063536	0.2314	3.904 A	0.896 A	0.0374 A
	-	std	0_018401	0.0149	0.425	0.0485	0.0029
		sem	0.006954	0.005631	0.160634	0.018331	0.001096

^{*-} RESTRICTED DIET GROUP

p= 0.05

A- SIGNIFICANCE FROM GROUP 1

p≃ 0.05

B- SIGNIFICANCE WITH GROUP 7 (RESTRICTED DIET)

APPENDIX H

ORGAN TO BODY WEIGHT RATIO
14-DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
MALE

			TESTIS	SPLEEN	LIVER	KIDNEY	BRAIN
	GROUP /	#	BODY	BODY	BODY	BODY	BODY
		-		. *		•	·
Oppm	1	Пеал	0.009	0.00196	0.04688	0.008498	0.00586
		std	0.000632	0.000398	0.003555	0.000832	0.000416
		sem	0.000238	0.000150	0.001343	0.000314	0.000157
125ppm	2	mean	0.0086 в	0.00195	0.05055 B	0.008608	0.0057 B
		std	0.000606	0.000185	0.003924	0.000658	0.000214
•		sem	0.000229	0.000069	0.001483	0.000248	0.00080
250ppm	3 .	mean	0.0094	0.002147	0.049 B	0.00824	0.00592 B
		std	0.001118	0.000261	0.000857	0.00068	0.000372
		sem	0.000422	0.000098	0.000323	0.000257	0.000140
500ppm	4	mean	0.009	0.002175	0.05168	0.00879	0.005896 в
	*	std	0.000786	0.000393	0.004648 B	0.000608	0.000361
		sem	0.000297	0.000148	0.001756	0.000229	0.000136
1000ppm	5	mean	0.0095	0.002071	0.051956 в	0.008419	0.006348
		std	0.000986	0.000223	0.003412	0.000472	0.000348
		sem	0.000372	0.000084	0.001289	0.000178	0.000148
2000ppm	6	mean	0.0168 AB	0.002383	0.05327 AB	0.008834	0.006939 A
		std	0.002266	0.0005	0.004406	0.000433	0.000939 X
		sem	0.000856	0.000188	0.001665	0.000163	0.000156
*0ppm	7	mean	0.0106	0.00191	0.03555 A	0.008234	0.006589 A
••		std	0.000622	0.00021	0.002805	0.000234	0.000475
		sem	0.000235	0:000079	0.001060	0.000230	0.000475

^{*-} RESTRICTED DIET GROUP

P = 0.05

P= 0.05

A- SIGNIFICANCE FROM GROUP 1

B- SIGNIFICANCE WITH GROUP 7 (RESTRICTED DIET)

ORGAN TO BODY WEIGHT RATIO, FINAL BODY WEIGHT 14-DAY FEEDING STUDY 4-AMINO, 2-NITROTOLUENE (4A2NT) STUDY NO. 55-YJ81-91 MALE

	GROUP #		ADRENAL BODY	BODY	
Орри	1	mean	0.000177	321.7	
		std	0.000021	21.8	
		sem	0.000007	8.239625	·
125ppm	.2	mean	0.000195	330 в	
• •		std	0.000118	15.3	
		sem	0.000044	5.782856	
250ppm	3	mean	0,00018	317.3 B	
		std	0.000031	20.9	
		sem	0.000011	7.899457	
500ppm	4	mean	0.000203	313.5 В	
• • •		std	0.000068	10.1	•
		sem	0.000025	3.817441	
1000pm	5	mean	0.000196	298.3	
• •		std	0.000018	26.7	
		sem	0.000006	10.09165	
2000ppm	6	mean	0.000235	274.7 A	
• • •		std	0.000047	20	•
		sem	0.000017	7.559289	
*Oppm	7	mean	0.000302	283.7 A	
		std	0.000109	13.2	- *
		sem	0.000041	4.989131	

^{*-} RESTRICTED DIET GROUP

A- SIGNIFICANCE FROM GROUP 1

P= 0.05

B- SIGNIFICANCE WITH GROUP 7 (RESTRICTED DIET)

P= 0.05

ORGAN TO BODY WEIGHT RATIO
14-DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
FEMALE

			OVARIES	SPLEEN	LIVER	KIDNEY	BRAIN
	GROUP	#	BODY	BODY	BODY	BODY	BODY
		•			•		
Оррт	1	mean	0.00063	0.00218	0.0409	0.008275	0.00798
Obb	•	std	0.000081	0.000203	0.00133	0.000392	0.000659
-		sem	0.000030	0.00026	0.000502	0.000148	0.000249
	-	00111	0.000050	0.000010	0.00000		
125ppm	2	mean	0.000601	0.00215	0.0426 B	0.007945	0.00796
•		std	0.000079	0.000385	0.00142	0.000744	0.000485
		sem	0.000029	0.000145	0.000536	0.000281	0.000183
250ppm	. 3	mean	0.000624	0.00196	0.0432 B	0.00785	0.00785
		std	0.000107	0.000407	0.00196	0.000525	0.000461
		sem	0.000040	0.000153	0.000740	0.000198	0.000174
500			0.000/00			0.0004	
500ppm	4	mean	0.000602	0.00218	0.044 B	0.00811	0.00823
		std	0.000087	0.000367	0.0023	0.00067	0.000814
•		sem	0.000032	0.000138	0.000869	0.000253	0.000307
1000ppm	5	mean	0.000587	0.00237	0.0461 A 🧟	0.00782	0.00799
4.		std	0.000141	0.000337	0.00203	0.000417	0.000663
		sem	0.000053	0.000127	0.000767	0.000157	0.000250
•							
2000ppm	6	mean.	0.000628	0.0028 AB	0.0479 A 🖔	0.008348	0.00908 A
		std	0.00004	0.000232	0.00207	0.00064	0.00084
		sem	0.000015	0.000087	0.000782	0.000241	0.000317
*Oppm	7	mean	0.000555	0.002	0.03425 A	0.00786	0.0088
•.•.		std	0.000148	0.000156	0.003215	0.000312	0.000522
		sem	0.000055	0.000058	0.001215	0.000117	0.000197

^{*-} RESTRICTED DIET GROUP

p= 0.05

A- SIGNIFICANCE FROM GROUP 1

p= 0.05

B- SIGNIFICANCE WITH GROUP 7 (RESTRICTED DIET)

ORGAN TO BODY WEIGHT RATIO, FINAL BODY WEIGHT 14-DAY FEEDING STUDY 4-AMINO, 2-NITROTOLUENE (4A2NT) STUDY NO. 55-YJ81-91 FEMALE

	•		ADRENAL	
	GROUP #		BODY	BODY
Орря	1	mean	0.000404	227.3
		std -	0.000088	19.8
		sem	0.000033	7.483696
125ppm	2	mean	0.000364	224.5
••		std	0.000031	19.9
		sem	0.000011	7.521493
250ppm	3	mean	0.000341	229.8
• •	:	std	0.000044	17.9
		sem	0.000016	6.765564
500ppm	·. 4	mean	0.000359	223
		std	0.000031	15.94
		sem	0.000011	6.024753
1000ppm	5	mean	0.00034	221.5
		std	0.000038	19.63
		sem	0.000014	7.419442
2000ppm	6	mean	0.000311	201.3
. ,		std	0.00008	15.41
		sem	0.000030	5.824432
*Oppm	7	mean	0.000328	203.3
• •		std	0.000024	11.79
		sem	0.000009	4.456201

^{*-} RESTRICTED DIET GROUP

A- SIGNIFICANCE FROM GROUP 1

p= 0.05

p= 0.05

B- SIGNIFICANCE WITH GROUP 7 (RESTRICTED DIET)

APPENDIX I

APPENDIX I PREDICTED VERSUS ACTUAL DAILY DOSES

DOSE	ACTUAL	ACTUAL	ACTUAL
Predicted	DAY 0-DAY 28	DAY 28-DAY 56	DAY 56-DAY 90
MALES			
500 ppm	412 ppm	448 ppm	518 ppm
	30 mg/kg/day	26 mg/kg/day	26 mg/kg/day
1,000 ppm	815 ppm	886 ppm	965 ppm
	57 mg/kg/day	52 mg/kg/day	48 mg/kg/day
2000 ppm	1687 ppm	1787 ppm	1950 ppm
	117 mg/kg/day	110 mg/kg/day	117 mg/kg/day
FEMALES			
500 ppm	412 ppm	448 ppm	518 ppm
	35 mg/kg/day	33 mg/kg/day	28 mg/kg/day
1,000 ppm	815 ppm	886 ppm	965 ppm
	66 mg/kg/day	65 mg/kg/day	64 mg/kg/day
2,000 ppm	1687 ppm	1787 ppm	1950 ppm
	141 mg/kg/day	136 mg/kg/day	136 mg/kg/day

APPENDIX J

SUMMARY OF DAILY MEAN FOOD CONSUMPTION (Grams)									
		STUDY: 4A2NT-1	1		SEX:	MALE	PAGE:	1	
÷		DOSE: (ppm)	0	500	1000	2000	O	÷	
. *	PERIOD	GROUP:		2-M	3-M	4-M	5-M		
									
	DAY 2	INTAKE (g)	26**B	26** B	25** B	19 AB	21** A		
		S.D.	2.1	1.6	1.1	2.3	0.5		
		EFF (g/kg)	<u></u>			·			
		N	10	10	10	10	10		
	DAY 5	INTAKE (g)	27**B	28** B	26** B	21**A	21 <u>A</u>		
		S.D.	1.8	1.8	1.3	2.0	0.4		
		EFF. (g/kg)							
		N (g) kg)	10	10	10	10	10		
	D414 7			801147	27.L.	2444	76.4		
	DAY 7	INTAKE (g)	27**B	29**AB	27** B	21** A	21 A		
•		S.D.	2.7	1.3	1.9	2.5	0.5		
		EFF. (g/kg)	110	118	109	91	75		
		N	10	10	10	10	. 10		
	DAY 9	INTAKE (g)	28**B	28** B	27** B	21**A	21 A		
		S.D.	2.0	1.8	1.9	3.1	0.0		
		EFF. (g/kg)	 .						
	•	N	10	10	10	10	10	•	
								4	
e - e -	DAY 12	INTAKE (g)	29**B	29** B	27** B	22**A	21 A		
ė.		S.D.	1.7	1.8	1.9	2.6	2.3	•	
		EFF. (g/kg)	· 		, .	 ·			
		N	10	10	10	10	10		
*									
	DAY 14	INTAKE (g)	29** B	29** B		19 A	21** A	-	
•		S.D.	1.6	1.7	1.4	5.0	0.3		
	•	EFF. (g/kg)	104	107	101	77.	75		
:		N	10	10	10	10	10		
•	DAY 16	INTAKE (g)	28** B	28** B	27** B	21**A	21 A	•	
		S.D.	1.5	2.5	2.3	2.0	0.3		
		EFF. (g/kg)							
		N	10	10	10	10	10		
	DAY 19	INTAKE (g)	29** B	29** B	27** B	21 Å	22** A		
	UMI 17	S.D.			2.4		0.0		
			2.4	2.1 	c.4	2.1	0.0 		
		EFF. (g/kg)			10	10	10		
		N	10	10	10	10			

^{*} P less than .05

Analysis of Variance using DUNCAN'S Procedure

^{**} P Less than .01

A - Significance with control Group 1
B - SIgnificance with pair Fed group 5

					CDV-	MATE		PAGE:	• 2
		STUDY: 4A2NT-M			SEX:	MALE		PAGE.	2
		DOSE: (ppm)	0	500	1000	2000	0		
	PERIOD	GROUP:	1-M	2-M	3-M.	4-M	5-M		
	DAY 21	INTAKE (g)	29** B	30** B	27** B	24 A	22A		
		S.D.	2.8	1.9	2.5	2.9	0.3		-
		EFF. (g/kg)	97	103	93	92	76		
		N	10	10	10	10	10		-
			29**B	30*∗ B	28 ★★ AB	23 A	₂₂ A		•
	DAY 23	INTAKE (g)			1.7	1.8	0.0		
		S.D.	2.5	2.4		1.0			
		EFF. (g/kg)		 40	 10	10	10		
•		· N ≑	10	10	iu				
	DAY 26	INTAKE (g)	29**B	29** B	28** B	23 A	23A		
		S.D.	1.8	1.6	2.4	1.8	0.0		
		EFF. (g/kg)							
,		N	10	. 10	10	10	10	•	
			70.1.P	28** B	28 ★ ★ B	25 *A	23A	d.	
	DAY 28	INTAKE (g)	30**B			3.8	0.0		
		S.D.	2.5	2.7	1.5	95	76		
		EFF. (g/kg)	97	93	92	9 3 10	10		
		· N	10	10	10	IQ.	10		
* .	DAY 30	INTAKE (g)	28**B	28**B	27** B	23 A	23 A		
		S.D.	1.8	1.5	2.0	2.1	0.0		
		EFF. (g/kg)							
		N	10	10	10	10	10		
	- .			20					
	DAY 31	INTAKE (g)		28 4.1	0.0	0.0	0.0		
		S.D.	0.0	4. !	0.0				
		EFF. (g/kg)		4	0		0		
		N	0	4	U				
	DAY 33	INTAKE (g)	28** B	31**B	26**	21 A	23 A		
		S.D.	1.4	7.3	2.9	2.2	0.0		
		EFF. (g/kg)	<u>.</u>			'			
		N	10	10	10	10	10		
. :	=		ant R	27**B	27** B	23 A	22 A		
•	DAY 35	INTAKE (g)	28** B		2.1	2.4	0.3		
		S.D.	1.5	2.0		2.4 85	70		
		EFF. (g/kg)	86	86	86		10	, -	
		N .	10	10	.10	10	10		

P less than .05

Analysis of Variance using DUNCAN'S Procedure

P less than .01

^{-- =} Data Unavailable A - Significance with control group (1-M)
B - Significance with pair Fed group (5-M)

		SUMMAR	Y OF DA	ILY MEAN	FOOD CO	NSUMPTIC	ON (Grams)	
		STUDY: 4A2NT-	<u></u> -		SEX:	MALE		PAGE: 3
	PERIOD	DOSE: (ppm) GROUP:	0 1-M	500 2-M	1000 3-M	2000 4-M	0 5-M	
						:		
	DAY 37	INTAKE (g)	28** B		24**A	22 ^A	23 A	
		S.D. EFF. (g/kg)	2.3	3.4 	2.0 	2.8	0.0	
		N (g//g/	10	10	10	10	10	
	DAY 40	INTAKE (g)	27** B	27** B	26**B	21A	21A	
		S.D.	2.2	2.1	2.1	2.1	0.0	•
		EFF. (g/kg)			 .	·		
• •		N	10	10	10	10	10	
	DAY 42	INTAKE (g)	27** B	27** B	25 ★ ★B	₂₁ A	22 A	
. *		S.D.	1.7	2.3	3.0	2.9	0.0	
		EFF. (g/kg)	80	81	7 7	76	67	•
		N	10	10	10	10	10	
	DAY 44	INTAKE (g)	27** B	_{27**} B	26**B	21A	22 A	
		S.D.	2.2	2.2	1.4	2.2	0.0	
		EFF. (g/kg)						
4	•	N .	10	10	10	10	10	
	DAY 47	INTAKE (g)	28** B	27** B	26** AB	21 ^A	21 A	
		S.D.	1.7	2.0	2.3	1.9	0.3	
	-	EFF. (g/kg)						
		N	10.	10	10	10	10	
	DAY 49	INTAKE (g)	28** B	26** AB	_{26**} AB	21 A	21 Å	
	•	S.D.	2.3	2.3	1.7	2.8	0.5	•
		EFF. (g/kg)	80	76	78	76	63 ,	
		N	10	10	10	10	10	
	DAY 51	INTAKE (g)	26** B	26** B	24**B	19 A	21 *A	
			2.2	2.7	2.2	2.7	0.0	
		EFF. (g/kg)						
		N	10	10	10	10	10 -	
	DAY 54	INTAKE (g)	28** B	27** B	26** B	₂₁ A	20 A	
		S.D.	2.1	2.2	2.3	3.2	0.0	
	•	EFF. (g/kg)					'	- · · · · · · · · · · · · · · · · · · ·
		N	10	10	10	10	10	

P less than .05

P less than .01

Data Unavailable

A - Significance with control group (1-M) B - Significance with pair Fed group (5-M)

						RENTT	-	PAGE:	Λ
		STUDY: 4A2NT-M			SEX:	MALE	•	PAGE:	*
e *		DOSE:(ppm)	0	500	1000	2000	0	*	
	PERIOD	GROUP:	1-M	2-M	3-M	4-M	5-M		
4	DAY 56	INTAKE (g)	27**B	26** B	25** AB	21 A	20 A		
		•	2.3	2.9	1.9	2.5	0.0		
		EFF. (g/kg)	77	76	74	74	61		
•	٠	N	10	10	10	10	10		
	544 50	THE AVE. (-)	27**B	27** B	24** AB	20 A	20A		
1	DAY 58				1.6	2.6	0.0		
*		S.D.	1.9 	1.7 	1.0			. *	
		EFF. (g/kg) N	. 10	10	10	10	10		
	* .	"	. 10	,,,					
	DAY 61	INTAKE (g)	27** B	27** B	24** AB	21 A	20 A		
	2,,,	S.D.	1.3	2.0	1.9	1.8	0.0		
		EFF. (g/kg)							
		N .	10	10	10	10	10		
	·		en. P	27** B	24** AB	21 A	21 A		
	DAY 63	•	27 ★ ★B			2.4	0.3		
		S.D.	1.5	2.1	1.9	2.4 74	62		
		EFF. (g/kg)	74	77	72	10	10		
·*		N ·	10	10	10		10		
	DAY 65	INTAKE (g)	28**B	26 * ★ B	24** AB	19 A	21 A		
		S.D.	3.7	2.4	2.2	2.5	0.3		
		EFF. (g/kg)							
		N	· 10	10	10	10	10		
			70		A 10	A	A		
	DAY 68	•	27**B	26** B			20A		
		S.D.	1.4	2.1	1.7	1.9	0.0		
		EFF. (g/kg)					46	•	
		N	10	10	10	10	10		
	DAY 70	INTAKE (g)	29**B	27** B	25** AB	22 A	20 A		
		S.D.	1.5	2.4	2.2	1.4	0.3		
		EFF. (g/kg)	77 .	76	74	77	60	•	
	• .	N (g/kg/	10	10	10	10	10		
		•							
•	DAY 72	INTAKE (g)	25** ^B	26** B	23** AB		₂₀ A		
		S.D.	2.1	2.1	2.3	2.2	0.0		
-		EFF. (g/kg)				 .	· 	•	
		N	10	10	10	10	10		

^{*} P Less than .05

^{**} P Less than .01

^{-- =} Data Unavailable A - Significance with control group (1-M)
B - Significance with pair Fed group (5-M)

		SUMMARY	OF DA	ILY MEAN	FOOD CO	NSUMPTI	ON (Grams)	
		STUDY: 4A2NT-M	I .		SEX:	MALE	PF	GE: 5
•		DOSE:(ppm)	0	500	1000	2000	0	
	PERIOD	GROUP:	1-M			4-M	5-M	
	Day 75	INTAKE (g)	27++ B	26** B	24++AB	21 A	₂₁ A	
	יאט או	S.D.	1.8	1.8	2.1	2.7	0.4	
	•	EFF. (g/kg)						
		N	10	10	10	10	10	
	DAY 77	INTAKE (g)	27** B	26** B	24**AB	21 A	21A	
	·	S.D.	2.1	1.8	1.7	2.5	0.3	
		EFF. (g/kg)	7 2	71	70	75	61	
٠.	٠	N	10	10	10	10	10	
	DAY 79	INTAKE (g)	26**B	26** B	23** AB	21 A	21A	
		S.D.	1.6	2.0	2.3	2.5	0.3	
		EFF. (g/kg)					 · .	•
		· N	10	10	10	10	10	
. *	DAY 82	INTAKE (g)	27** B	26** B	24** AB	20 A	21A	
		S.D.	1.7	2.3	2.0	2.2	0.0	
	•	EFF. (g/kg)		· . .				
		N .	10	10	10	10	10	
	DAY 83	INTAKE (g)		· ·		<u></u>	35 42/2	= 21g/day
,		\$.D.	0.0	0.0	0.0	0.0	4.0	
		EFF. (g/kg)				· <u></u>	97	
		M ·	0	. 0	0	0	10	
	DAY 84	INTAKE (g)	28**B	25** AB	23** A	22**A	7A 21g/	lay
		S.D.	1.3	1 4	1.6	2.3	3.9	
		EFF. (g/kg)	73	69	68	80	22	•
		N	10	10	-10	10	10	
	DAY 86	INTAKE (g)	25**B	25** B	22 A	21 A	21A	
		S.D.	1.3	2.8	3.0	3.0	0.0	
		EFF. (g/kg)					 .	
		N	10	10	10	. 10	10	
	DAY 89	INTAKE (g)	27**B	23**	23**	₂₀ A	20 ^A	
		S.D.	1.4	6.9	2.3	3.9	0.0	
		Eff. (g/kg)						•
		N	10	10	10	10	10	

^{*} Pless than .05

Analysis of Variance using DUNCAN'S Procedure

^{**} Pless than .01

^{-- =} Data Unavailable A - Significance with control group (1-M) B - Significance with pair Fed group (5-M)

	STUDY:	4A2NT-M		·	SEX:	MALE		PAGE:	6	
	DOSE: (pp	Cm.	0	500	1000	2000	0			
PERIO	• • •		1-M	2-M	3-M	4-H	5-M			·
			OF LL P	2/ # B	22 AB	20 A	20 A			
DAY 90	_	~	25**B	.24 * B	2.5	3.0	0.4			
	S.D.		2.2	2.4			57			
•	EFF. (g	/kg)	65	67	65	73				
	N		10	10	10	10	10			

^{*} P less than .05

Analysis of Variance using DUNCAN'S Procedure

^{**} P less than .01

^{-- =} Data Unavailable

A - Significance with control group (1-M)

B - Significance with pair Fed group (5-M)

		SUMMA	RY OF DA	ILY MEAN	FOOD CO	NSUMPTIO	N (Grams)			
·		STUDY: YJ819	0F		SEX:	FEMALE		PAGE:	1	
		DOSE: (ppm)	0	500	1000	2000	O _			
•	PERIOD	GROUP:	1-F	2-F	3-F	4-F	5-F	 -		
						45 AD				
	DAY 2	INTAKE (g)	19**B 2.0	19 ** 1.8	18** 1.1	15 AB 2.8	17 ** A 1.6			
÷		S.D. EFF. (g/kg)						•		
		N (g/kg/	10 .	10	10	. 10	10			, .
	DAY 5	INTAKE (g)	20 ⊁* B	20** B	20 * ≉ B	18 ★ ≴A	17A			
		S.Đ.	1.9	1.9	1.7	2.2	1.1			
		EFF. (g/kg)								
		N .	10	10	10	10	1 0			
	DAY 7	INTAKE (g)	19	21	19	19	23			
	• • • • • • • • • • • • • • • • • • • •	S.D.	1.9	3.1	9.9	1.8	3.6			
		EFF. (g/kg)	. 114	125	113	116	117			
		N	10	. 10	10	10	10			-
	DAY 9	INTAKE (g)	20 ★ ★ B	20** B	20** B	17**A	17A			
	÷	S.D.	1.8	2.2	2.2	1.6	1.1			
		EFF. (g/kg)	. · ·							
		N	10	10	10	10	10			
	DAY 12	INTAKE (g)	20**B	21** B	19** B	18**A	17A			
		S.D	1.9	2.0	1.8	1.7	0.3			
		EFF. (g/kg)		·						
	•	N .	10	10	10	10	10			
•	DAY 14	INTAKE (g)	20**B	19** B	18**	16 A	16** A			
		S.D.	1.6	2.9	3.4	3.1	1.6			
		EFF. (g/kg)	109	105	100	93	85			
		Ň .	10	10	10	10	10	-		
•	DAY 16	INTAKE (g)	19**B	20** B	19** B	16 A	17** A			
		S.D.	2.2	1.6	1.9	2.3	0.0		.*	
		EFF. (g/kg)		· —						
		N	10	10	10	10	10	٠		
-	DAY 19	INTAKE (g)	21**B	22** B	20** B	18**A	16A			
		S.O.	1.6	2.6	2.9	1.8	1.9			
	•	EFF. (g/kg)		· 				•		
		N	10	10	10	10	10			

A - Significance with control group (1-F)

P less than .05

P less than .01

B - Significance with pair Fed group (5-F) $\Im - 8$

		DUMMALI	OF DA.	CHI MINI	FOOD CO			
		STUDY: YJ8190F			SEX:	FEMALE	PAGI	Ξ: 2
		0005-()	o	500	1000	2000	0	
	PERIOD	DOSE:(ppm) GROUP:	1–F	2-F	3-F	4-F	5-F	
		TAITAICE (-3	20 *B	21** B	21** B	18 A	18A	
	DAY 21	INTAKE (g)	2.0	1.4	3.9	1.6	0.0	•
•		S.D.	106	110	109	102	90	
		EFF: (g/kg)	100	10	10	10 ·	10	
		N	10	,,,		•		
	DAY 23	INTAKE (g)	22**B	22** B	22 ★ ★ B	18 A	18 <u>A</u>	
	UNI ZJ .	S.D.	2.7	2.9	2.6 ,	- 1.9	0.3	
		EFF. (g/kg)		·				
		N GANA	10	10	10	10	10	1
•	DAY 26	INTAKE (g)	21**B	23** B	20 * B	19 A	18 <u>A</u>	
	DATE 25.	S.D.	2.2	2.8	2.1	1.3	0.0	
		EFF. (g/kg)				 ·		
•		N tg/ tg/	10	10	10	10	10	
	DAY 28	INTAKE (g)	21** B	22** B	22** B	18 A	18 A	
		S.D.	2.4	2.9	2.0	1.7	0.3	
		EFF. (g/kg)	105	109	110	100	89	
		N.	10	10	10	10	10	
				* .				
	DAY 30	INTAKE (g)	21** B	22** B	20 * ^B	18 A	18 A	
		S.D.	2.1	1.8	1.3	1.3	0.6	
		EFF. (g/kg)			"	 .		
		N ·	10	10	10	10	10	
			٠					
	DAY 33	INTAKE (g)	21** B	23** B	22** B	18 A	18 A	
	, ,	S.D.	3.2	2.6	2.2	1.4	0.3	100
		EFF. (g/kg)		·				
		N'	10	10	10	10	10	:
					_	4	Á	
	DAY 35	INTAKE (g)	21 * B	22** B	21** ^B	18 A	18 A	
		S.D.	2.6	2.1	1.6	1.1	0.6	
		EFF. (g/kg)	98	104	103	9 8	8 6	•
		N .	10	10	10	10	10	
				<u>.</u>	470		· A	
	DAY 37	INTAKE (g)	22** B	22** B	21** AB	17 A	18 A	•
		S.D.	2.1	2.5	2.5	1.1	0.3	
		EFF. (g/kg)						
		N	10	10	10	10	10	

^{*} Pless than .05

Analysis of Variance using DUNCAN'S Procedure

^{**} P Less than .01

A - Significance with control group (1-F)

B - Significance with pair Fed group (5-F)

		DUMM.	ARY OF DA	TLI MEAN	roop co	MSUMPTIC	JN (Grams)	
	, -	STUDY: YJ81	90F		SEX:	FEMALE		PAGE: 3
		DOSE:(ppm)	0	500 ′	1000	2000	0	
	PERIOD	GROUP:	1-F	2-F	3-F	4-F	5-F	
			. В	·· R	ī.	Λ	٨	
	DAY 40	INTAKE (g)	20 *∗ ^B	21** B			17 ^A	
		S.D.	2.7	2.1	1.5	1.0	0.0	
	•	EFF. (g/kg)					'	
		N	10	10	10	10	10	
	DAY 42	INTAKE (g)	21**B	21** B	19 *AB	17 A	17A	
		S.D.	1.6	1.4	2.5	1.2	0.3	
		EFF. (g/kg)	99	98	89	88	7 9	
		N .	10	10	10	10	10	
	DAY 44	INTAKE (g)	19 *B	21** B	19 *B	17 A	17A	
		S.D.	1.9	2.0	2.8	1.3	0.0	
		EFF. (g/kg)			 .	·		
		N -	10	10	10	10	10	
	DAY 47	INTAKE (g)	21**B	22** B	20** B	17 A	17A	
	,	S.D.	1.9	1.9	1.7	0.9	0.3	
		EFF. (g/kg)			·			
		N	10	10	10	10	10	
								-
	DAY 49	INTAKE (g)	20**B	19 * B	17 A	17 A	17A	•
-		S.D.	2.3	1.4	3.2	1.4	0.5	
		EFF. (g/kg)	90	88	82	90	81	
		N .	10	10	10	10	10	
	DAY 51	INTAKE (g)	18 *	19** B	18 *	16 A	17 ^A	
		S.D.	1.8	1.8	1.4	1.5	0.3	
	•	EFF. (g/kg)		1.0		·		
		N (g/kg/	10	10	10	10	10	
					10		10	
	DAY 54	INTAKE (g)	20** ^B	21** B	19** B	17 A	16 ^A	·
		S.D.	2.9	3.3	1.7	1.2	0.3	
	,	EFF. (g/kg)			·			•
		N	10	10	10	10	10	
	DAY 56	INTAKE (g)	19** ^B	21** B	20** B	17 A	16 ^A	
		S.D.	1.8	2.4	2.1	1.3	0.6	
		EFF. (g/kg)	88	94	91	90	77	
		N (g/kg/	10	10	10	10	10	•

P less than .05

Analysis of Variance using DUNCAN'S Procedure

P less than .01

A - Significance with control group (1-F) B - Significance with pair fed group (5-F)

		STUDY:	YJ8190F			SEX:	FEMALE		PAGE:	4
				0	500	1000	2000	0		
	PERIOD	DOSE: (pp GROUP:		1-F	2-F	3-F	4-F	5F		
				·` ·						
		•			ъ	· n	471	16 A		
	DAY 58	INTAKE (g)	21** B	21** B	20**B	17A	0.0	÷	
		S.D.		2.2	2.2	2.6	1.3			•
		EFF. (g	/kg)			 10	10	10		
		N		10	10	10	10			
	NAV 41	INTAKE (a)	20** B	20** B	19**B	17A	17 A		
	DAY 61	S.D.	g)	1.3	1.6	1.4	1.4	0.0		•
		EFF. (g	/ka)							
	•	N K	/ kg/	10	10	10	10	10		
			•							
	DAY 63	INTAKE (g)	20** B	21** ^B	19 *	17A	17 A		
		S.D.		3.2	2.8	2.0	1.3	0.3		
		EFF. (g	/kg)	87	94	8 6	87	77		
		N		10	10	10	10	10		
				20** B	19**	19**B	16 A	17 A		•
	DAY 65	INTAKE (g)			2.4	0.9	0.3		
		S.D.	(12	1.8	3.6					
		EFF. (g N	/kg/	10	10	10	10	10		
		11		.0						
	DAY 68	INTAKE (a)	20** B	20**B	20**B	17A	16 A		
		S.D.	5	1.9	3.4	1.6	1.6	0.0		
		EFF. (g	/kg)							
		N	-	10	10	10	10	10		
		•				ъ	A	ara À		
	DAY 70	INTAKE (g)	21** B	20** ^B	19** ^B	17 A	17 A		
		S.D.		2.6	2.5	1.4	1.2	0.3		
		EFF. (g	/kg)	9 2	87	88	89	77 10		
		N		10	10	10	10	10		
			*	20** B	21** ^B	19** ^B	16 A	17 A		
	DAY 72		g)	2.4	3.9	2.1	1.8	0.5		
•		\$.D.	(1-)		J. 7 .					
		EFF. (g	/kg/	10	10	10	10	10		
		N		10	•					
	DAY 75	INTAKE (n)	20** B	19**B	19**B	17 A	16 A		
	VAL (2	S.D.	91	2.3	3.1	1.1	1.1	0.0		
		EFF. (g	(kg)							•
		N N	, ,,,	10	10	10	10	10		

A - Significance with control group (1-F)

P less than .01

B - Significance with pair fed group (5-F)

	_	SUMMAR	Y OF DA	 TLX WEAN	FOOD CO	NBUMF110.		
		STUDY: YJ8190	F		SEX:	FEMALE	PAGE:	5
		DOSE:(ppm)	. 0	500	1000	2000	· 0	
	PERIOD	GROUP:	1-F	2-F		4-F	5-F	
	•		· R	en . R	18 * B	1 7 Δ	16 A	,
*	DAY 77	INTAKE (g)	20** B		2.1	1.1	0.6	·
		S.D.	1.8	2.9	83	86	74	
		EFF. (g/kg)	84	87	10	10	10	
	•	N	10	10	ŧU	10	10	
,	DAT 79	INTAKE (g)	19** B	19**B	19** B	16 A	16 A	
•		S.D.	2.9	2.7	2.3	1.5	0.3	-
		Eff. (g/kg)			 , .	 .		
		N	10	10	10	10	-10	
		TNITAKE (-)	20** B	21** ^B	18** B	16 A	16 A	
	DAY 82	——————————————————————————————————————	1.7	2.1	1.2	1.3	0.3	
		S.D. EFF. (g/kg)		Z. (,	1.6		•	
		N (g/kg)	10	10	10	10	, ,, 10	
		A	10		10	10		
	DAY 83	INTAKE (g)					28	
		S.D.	0.0	0.0	0.0	0.0	5.1	
		EFF. (g/kg)					118	
		Ν	0	0 :	0	0	10	
	DAY 84	INTAKE (g)	18** B	19** B	19** B	16 ★ ∧	5A 16.5g	
	DA1 04	S.D.	2.3	2.8	2.4	1.8	5.4	
		EFF. (g/kg)	2.3 77	82	85	84	22	
		N (g/kg/	10	10	10	10	10	
÷		"	10	10	.0		,_	
•	DAY 86	INTAKE (g)	18** ^B	19** ^B	18** B	15 A	16 A	
* .		S.D.	2.8	2.6	2.3	1.1	0.3	
	•	EFF. (g/kg)	· · · ,	 ·				•
		N	10	10	10	10	10	
			45 B	noB	anu B	16 ^A	σ. Δ	•
	DAY 89	INTAKE (g)	19** B	20** ^B	19** B		16 A	
		S.D.	1.9	1.9	1.4	1.1	1.0	
		EFF. (g/kg)				40		
		N .	10	10	10	10	10	•
	DAY 90	INTAKE (g)	19** B	19**B	17** AB	₁₅ A	15 A	
		S.D.	2.7	2.0	2.1	1.6	0.9	
		EFF. (g/kg)	83	83	78	80	67	•
		N S	10	10	10	10	10	

P less than .05

Analysis of Variance using DUNCAN'S Procedure

P less than .01

^{-- =} Data Unavailable

A - Significance with control group (1-F) B - Significance with pair fed group (5-F)

 	SUMMARY	OF	DAILY MEAN	FOOD CO	ONSUMPTIO	M (Grams)		
 	STUDY: YJ8190F			SEX	FEMALE	·	PAGE:	6
	DOSE: (ppm)	0	500	1000	2000	0 .	-	
 PERIOD	GROUP:	1-F	2-F	3-F	4-F	5-F		<u>-</u>
DAY 91	INTAKE (g)	17	19	18	. 16			
	S.D.	2.8	3.2	2.7	0.7	0.0		
	EFF. (g/kg)	73	84	83	85			
	N .	10	10	10	.10	0		

^{*} P less than .05

^{**} P less than .01

^{-- =} Data Unavailable

APPENDIX K

STUDY: 4A2NT-M DOSE: (ppm) 0 500 1000 2000 0 PERIOD GROUP: 1-H 2-H 3-H 4-H 5-H DAY 0 MEAN 214 B 214 B 212 B 271++ A S.D. 10.4 8.6 9.4 9.5 10.6 N 10 10 10 10 10 10 DAY 7 MEAN 276++ 276++ 273++ 250 AB 271++ S.D. 13.8 10.7 12.2 12.7 11.3 N 10 10 10 10 10 10 DAY 14 MEAN 3353+B 326++ B 325+B 276 AB 294++ A S.D. 24.0 12.5 14.6 17.6 12.4 N 10 10 10 10 10 10 DAY 21 MEAN 370++ B 368++ B 365++ B 325+B 3134+A S.D. 16.9 16.2 19.1 21.4 12.0 N 10 10 10 10 10 DAY 28 MEAN 396+* B 391++ B 387++B 313AB 336++ A S.D. 16.9 10 10 10 10 10 DAY 35 MEAN 427++ B 417++ B 409++B 326AB 357++ A S.D. 22.0 24.9 31.3 27.3 11.8 N 10 10 10 10 10 10 DAY 42 MEAN 472++ B 441++ B 425++ AB 337AB 366++ A S.D. 22.0 24.9 31.3 27.3 11.8 N 10 10 10 10 10 10 DAY 49 MEAN 472++ B 445++ AB 337AB 366++ A S.D. 22.0 24.9 31.3 27.3 11.8 N 10 10 10 10 10 10 DAY 49 MEAN 472++ B 455++ AB 337AB 372++ A S.D. 22.0 24.9 31.3 27.3 11.8 N 10 10 10 10 10 10 DAY 49 MEAN 472++ B 455++ B 425++ AB 377AB 379++ A S.D. 22.0 24.9 31.3 27.3 11.8 N 10 10 10 10 10 10 DAY 49 MEAN 472++ B 455++ B 439++AB 34AB 372++ A S.D. 22.0 24.9 31.3 26.0 12.5 N 10 10 10 10 10 10 DAY 56 MEAN 485++B 467++B 445++AB 345 AB 379++ A S.D. 28.0 27.5 32.4 30.3 11.6 N 10 10 10 10 10 10 DAY 63 MEAN 504++ B 467++B 453++AB 343AB 390++A S.D. 28.0 27.5 32.4 30.3 11.6 N 10 10 10 10 10 10 DAY 63 MEAN 504++B 481++B 453++AB 343AB 390++A S.D. 28.0 27.5 32.4 30.0 14.5 N 10 10 10 10 10 10			· .	SUMMAI	RY OF BOI	OY WEIGHT	S (Grams)			·
PERIOD GROUP: 1-H 2-H 3-H 4-H 5-H DAY 0 MEAN 214 B 214 B 212 B 271** A 5.D. 10.6 N 10 10 10 10 10 10 DAY 7 MEAN 276** 276** 273** 250 ^{AB} 271** S.D. 13.8 10.7 12.2 12.7 11.3 N 10 10 10 10 10 10 DAY 14 MEAN 333** 326** 326** 323** 326** 323** 326** A 5.D. 24.0 12.5 14.6 17.6 12.4 N 10 10 10 10 10 10 DAY 21 MEAN 370** B 368** B 368** B 365** B 299 A 313** A 5.D. 16.9 16.2 19.1 21.4 12.0 N 10 10 10 10 10 10 DAY 28 MEAN 396** B 391** B 397** B 313AB 336** A 5.D. 19.9 20.5 24.6 19.0 10.8 N 10 10 10 10 10 10 DAY 35 MEAN 427** B 47** B 409** B 326AB 357** A 5.D. 22.7 21.5 27.3 22.0 11.7 N 10 10 10 10 10 10 DAY 42 MEAN 427** B 417** B 409** B 326AB 357** A 5.D. 22.0 24.9 31.3 27.3 11.8 N 10 10 10 10 10 10 DAY 49 MEAN 451** B 445** B 425** AB 337AB 368** A 5.D. 25.D. 26.2 30.8 28.0 12.5 N 10 10 10 10 10 10 DAY 49 MEAN 472** B 455** B 439** AB 344AB 372** A 5.D. 25.D. 26.2 30.8 28.0 12.5 N 10 10 10 10 10 10 DAY 56 MEAN 485** B 455** B 439** AB 349* AB 379** A 5.D. 25.D. 26.2 2 30.8 28.0 12.5 N 10 10 10 10 10 10 DAY 56 MEAN 485** B 466** B 445** AB 349* AB 379** A 5.D. 28.0 27.5 32.4 30.3 11.6 N 10 10 10 10 10 10 DAY 56 MEAN 485** B 466** B 445** AB 349* AB 379** A 5.D. 28.0 27.5 32.4 30.3 11.6 N 10 10 10 10 10 10 DAY 63 MEAN 50.0** B 481** B 453** AB 349* AB 379** A 5.D. 28.0 27.5 32.4 30.0 11.5			STUDY: 4A2NT-	-M	·	SEX:	MALE		PAGE:	1
PERIOD GROUP: 1-H 2-H 3-H 4-H 5-H DAY 0 MEAN 214 B 214 B 212 B 271** A 5.D. 10.6 N 10 10 10 10 10 10 DAY 7 MEAN 276** 276** 273** 250 ^{AB} 271** S.D. 13.8 10.7 12.2 12.7 11.3 N 10 10 10 10 10 10 DAY 14 MEAN 333** 326** 326** 323** 326** 323** 326** A 5.D. 24.0 12.5 14.6 17.6 12.4 N 10 10 10 10 10 10 DAY 21 MEAN 370** B 368** B 368** B 365** B 299 A 313** A 5.D. 16.9 16.2 19.1 21.4 12.0 N 10 10 10 10 10 10 DAY 28 MEAN 396** B 391** B 397** B 313AB 336** A 5.D. 19.9 20.5 24.6 19.0 10.8 N 10 10 10 10 10 10 DAY 35 MEAN 427** B 47** B 409** B 326AB 357** A 5.D. 22.7 21.5 27.3 22.0 11.7 N 10 10 10 10 10 10 DAY 42 MEAN 427** B 417** B 409** B 326AB 357** A 5.D. 22.0 24.9 31.3 27.3 11.8 N 10 10 10 10 10 10 DAY 49 MEAN 451** B 445** B 425** AB 337AB 368** A 5.D. 25.D. 26.2 30.8 28.0 12.5 N 10 10 10 10 10 10 DAY 49 MEAN 472** B 455** B 439** AB 344AB 372** A 5.D. 25.D. 26.2 30.8 28.0 12.5 N 10 10 10 10 10 10 DAY 56 MEAN 485** B 455** B 439** AB 349* AB 379** A 5.D. 25.D. 26.2 2 30.8 28.0 12.5 N 10 10 10 10 10 10 DAY 56 MEAN 485** B 466** B 445** AB 349* AB 379** A 5.D. 28.0 27.5 32.4 30.3 11.6 N 10 10 10 10 10 10 DAY 56 MEAN 485** B 466** B 445** AB 349* AB 379** A 5.D. 28.0 27.5 32.4 30.3 11.6 N 10 10 10 10 10 10 DAY 63 MEAN 50.0** B 481** B 453** AB 349* AB 379** A 5.D. 28.0 27.5 32.4 30.0 11.5	.*		DOSE: (ppm)	0	500	1000	2000	0		
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DAY 7 MEAN 276** 276** 273** 250 ^{AB} 271** S.D. 13.8 10.7 12.2 12.7 11.3 N 10 10 10 10 10 10 DAY 14 NEAN 333** 333** 326** 323**										
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DAY 14 MEAN 3335k 326kk B 325kk B 276 AB 294kk S.D. 24.0 12.5 14.6 17.6 12.4 N			S.D.	13.8	10.7			11.3		
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DAY 35 HEAN 427** B 417** B 409** B 326AB 357** A S.D. 22.7 21.5 27.3 22.0 11.7 N 10 10 10 10 10 DAY 42 HEAN 451** B 441** B 425** AB 337AB 368** A S.D. 22.0 24.9 31.3 27.3 11.8 N 10 10 10 DAY 49 HEAN 472** B 455** B 439** AB 344AB 372** A S.D. 25.0 26.2 30.8 28.0 12.5 N 10 10 DAY 56 HEAN 485** B 467** B 445** AB 343 AB 379** A S.D. 28.0 27.5 32.4 30.3 11.6 N 10 10 DAY 63 MEAN 504** B 481** B 453** AB 343AB 390** A S.D. 30.2 28.4 34.0 30.0 14.5			S.D.	19.9	20.5	24.6	19.0	10.8		
S.D. 22.7 21.5 27.3 22.0 11.7 N 10 10 10 10 10 DAY 42 HEAN 451** B 441** B 425** AB 337AB 368** A S.D. 22.0 24.9 31.3 27.3 11.8 N 10 10 10 10 10 10 DAY 49 MEAN 472** B 455** B 439** AB 344AB 372** A S.D. 25.0 26.2 30.8 28.0 12.5 N 10 10 10 10 10 10 DAY 56 MEAN 485** B 467** B 445** AB 343 AB 379** A S.D. 28.0 27.5 32.4 30.3 11.6 N 10 10 10 10 10 10 DAY 63 MEAN 504** B 481** B 453** AB 343AB 390** A S.D. 30.2 28.4 34.0 30.0 14.5		-	N	10	10	10	10	10		
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DAY 49 MEAN 472** B 455** B 439** AB 344AB 372** A S.D. 25.0 26.2 30.8 28.0 12.5 N 10 10 10 10 DAY 56 MEAN 485** B 467** B 445** AB 343 AB 379** A S.D. 28.0 27.5 32.4 30.3 11.6 N 10 10 10 DAY 63 MEAN 504** B 481** B 453** AB 343AB 390** A S.D. 30.2 28.4 34.0 30.0 14.5			S.D.	22.0	24.9	31.3	27.3	11.8		
S.D. 25.0 26.2 30.8 28.0 12.5 N 10 10 10 10 10 DAY 56 MEAN 485** B 467** B 445** AB 343 AB 379** A S.D. 28.0 27.5 32.4 30.3 11.6 N 10 10 10 10 10 10 DAY 63 MEAN 504** B 481** B 453** AB 343AB 390** A S.D. 30.2 28.4 34.0 30.0 14.5	•		N	10	10	10	10	10		
S.D. 25.0 26.2 30.8 28.0 12.5 N 10 10 10 10 10 DAY 56 MEAN 485** B 467** B 445** AB 343 AB 379** A S.D. 28.0 27.5 32.4 30.3 11.6 N 10 10 10 10 10 10 DAY 63 MEAN 504** B 481** B 453** AB 343AB 390** A S.D. 30.2 28.4 34.0 30.0 14.5	•	DAY 60	MEAN	AZOLL B	Acces D	/7044Å D	744 A D	7771.		
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DAY 63 MEAN 504** B 481** B 453** AB 343AB 390** A S.D. 30.2 28.4 34.0 30.0 14.5			S.D.	28.0	27.5	32.4	30.3	11.6		
S.D. 30.2 28.4 34.0 30.0 14.5			N	10	10	10	10	10	1	
S.D. 30.2 28.4 34.0 30.0 14.5	· ·	DAY 63	MEAN	504** B	481** B	453** AB	343AB	390 + +A		,
						· ·	•			

^{*} Pless than .05

Analysis of Variance using DUNCAN'S Procedure

^{**} P less than .01

A - Significance with control group (1-M)

B - Significance with pair fed group (5-M)

		SUMMARY	OF BODY	WEIGHTS	(Grams)			
 	STUDY: 4A2NT-	 M		SEX:	MALE	PA	GE: 2	
PERIOD	DOSE: (ppm) GROUP:	0 1-M	500 2-K	1000 3-M	2000 4-M	0 5-M	·	<i></i> .
DAY 70	MEAN S.D. N	519** ^B 30.4 10	489** AB 29.8 10	459**AB 37.0 10	340AB 33.1 10	397** A 14.6 10		
DAY 77	MEAN S.D. N	531** B 33.4	499** AB 30.8 10	465** AB 37.6 10	344AB 33.4 10	406** A 13.2 10		
DAY 83	MEAN S.D. N	 0	 0	 0	 0	448 17.2 10	٠.	
DAY 84	MEAN S.D. N	542** B 32.8 10	505**AB 30.5 10	468** AB 37.4 10	342 AB 33.7 10	415**A 14.0 10		
DAY 90	MEAN S.D. N	553** B 33.1 10	510**AB 31.0 10	470** AB 39.2 10	343AB 36.7 10	422**A 14.7 10		

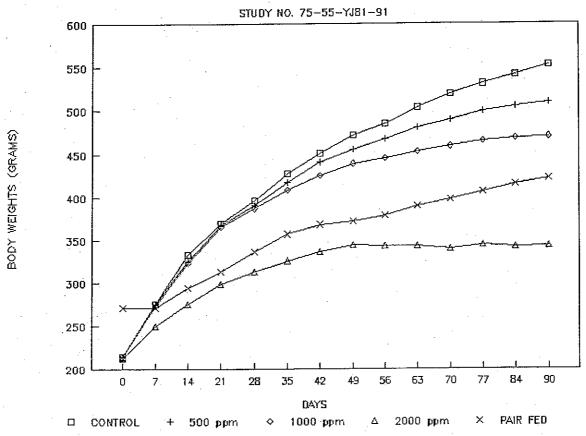
P less than .05

P less than .01

^{-- =} Data Unavailable

A - Significance with control group (1-M) B - Significance with pair Fed group (5-M)

MALE 90-DAY FEEDING STUDY



STUDY: YJ8190F SEX: FEMALE PAGE: 1					SUMMAR	Y OF BOI	Y WEIGHT	S (Grams)			
DAY 0			STU	DY: YJ819	0F		SEX:	FEMALE		PAGE:	1
S.D. 8.9 10.0 12.6 8.1 9.8 N 10 10 10 10 10 10 DAY 7 MEAN 182*** B 181** B 182** B 177* B 205*** S.D. 12.2 8.6 9.3 8.1 14.4 N 10 10 10 10 10 10 DAY 14 MEAN 208** 208** 204** 190AB 202** S.D. 15.4 11.8 11.6 10.8 10.1 N 10 10 10 10 10 10 DAY 21 MEAN 229** B 232** B 226** B 206A 208** A S.D. 18.4 13.0 16.7 11.1 8.4 N 10 10 10 10 10 10 DAY 28 MEAN 249** B 243** B 243** B 210A 221** A S.D. 20.2 16.6 14.9 11.8 10.0 N 10 10 10 10 10 10 DAY 35 MEAN 262** B 261** B 254** B 216 AB 231** A S.D. 24.2 16.0 16.7 12.5 7.7 N 10 10 10 10 10 10 DAY 42 MEAN 278** B 273** B 261** B 254** B 216 AB 231** A S.D. 24.2 16.0 16.7 12.5 7.7 N 10 10 10 10 10 10 DAY 42 MEAN 278** B 273** B 261** B 254** A S.D. 28.6 16.4 19.8 11.8 6.8 N 10 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226A 240** A S.D. 28.6 16.4 19.8 11.8 6.8 N 10 10 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226A 240** A S.D. 28.6 16.4 19.9 12.2 6.8 N 10 10 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226A 240** A S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 10 10 DAY 56 MEAN 287** B 287** B 279** B 278** B 279** B 274* B 274* A S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 10 10 DAY 63 MEAN 288** B 295** B 277** B 230A 247** A S.D. 28.4 228** B 225** B 277** B 230A 247** A S.D. 28.4 228** B 225** B 277** B 230A 247** A S.D. 28.4 228** B 225** B 277** B 230A 247** A S.D. 28.4 228** B 225** B 277** B 230A 247** A S.D. 28.4 228** B 295** B 277** B 230A 247** A S.D. 28.4 228** B 226A 247** A S.D. 28.4 228** B 225** B 277** B 230A 247** A S.D. 28.4 228** B 225** B 277** B 230A 247** A S.D. 28.4 228** B 225** B 277** B 230A 247** A S.D. 28.4 22.6 21.7 12.6 7.6		PERIO	DD .				•				
S.D. 8.9 10.0 12.6 8.1 9.8 N 10 10 10 10 10 10 DAY 7 MEAN 182*** B 181** B 182** B 177* B 205*** S.D. 12.2 8.6 9.3 8.1 14.4 N 10 10 10 10 10 10 DAY 14 MEAN 208** 208** 204** 190AB 202** S.D. 15.4 11.8 11.6 10.8 10.1 N 10 10 10 10 10 10 DAY 21 MEAN 229** B 232** B 226** B 206A 208** A S.D. 18.4 13.0 16.7 11.1 8.4 N 10 10 10 10 10 10 DAY 28 MEAN 249** B 243** B 243** B 210A 221** A S.D. 20.2 16.6 14.9 11.8 10.0 N 10 10 10 10 10 10 DAY 35 MEAN 262** B 261** B 254** B 216 AB 231** A S.D. 24.2 16.0 16.7 12.5 7.7 N 10 10 10 10 10 10 DAY 42 MEAN 278** B 273** B 261** B 254** B 216 AB 231** A S.D. 24.2 16.0 16.7 12.5 7.7 N 10 10 10 10 10 10 DAY 42 MEAN 278** B 273** B 261** B 254** A S.D. 28.6 16.4 19.8 11.8 6.8 N 10 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226A 240** A S.D. 28.6 16.4 19.8 11.8 6.8 N 10 10 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226A 240** A S.D. 28.6 16.4 19.9 12.2 6.8 N 10 10 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226A 240** A S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 10 10 DAY 56 MEAN 287** B 287** B 279** B 278** B 279** B 274* B 274* A S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 10 10 DAY 63 MEAN 288** B 295** B 277** B 230A 247** A S.D. 28.4 228** B 225** B 277** B 230A 247** A S.D. 28.4 228** B 225** B 277** B 230A 247** A S.D. 28.4 228** B 225** B 277** B 230A 247** A S.D. 28.4 228** B 225** B 277** B 230A 247** A S.D. 28.4 228** B 295** B 277** B 230A 247** A S.D. 28.4 228** B 226A 247** A S.D. 28.4 228** B 225** B 277** B 230A 247** A S.D. 28.4 228** B 225** B 277** B 230A 247** A S.D. 28.4 228** B 225** B 277** B 230A 247** A S.D. 28.4 22.6 21.7 12.6 7.6		·									
S.O. 8.9 10.0 12.6 8.1 9.8 N 10 10 10 10 10 10 DAY 7 NEAN 182*** B 181** B 182** B 177.B 205*** S.O. 12.2 8.6 9.3 8.1 14.4 N 10 10 10 10 10 10 DAY 14 MEAN 208** 208** 204** 190AB 202*** S.D. 15.4 11.8 11.6 10.8 10.1 N 10 10 10 10 10 DAY 21 MEAN 229** B 232** B 226** B 206A 208** A S.D. 18.4 13.0 16.7 11.1 8.4 N 10 10 10 10 10 10 DAY 28 MEAN 249** B 249** B 243** B 210A 221** A S.D. 20.2 16.6 14.9 11.8 10.0 N 10 10 10 10 10 DAY 35 MEAN 262** B 261** B 254** B 210 A 221** A S.D. 24.2 16.0 16.7 12.5 7.7 N 10 10 10 10 10 10 DAY 42 NEAN 262** B 261** B 254** B 216 AB 231** A S.D. 24.2 16.0 16.7 12.5 7.7 N 10 10 10 10 10 10 DAY 42 NEAN 278** B 273** B 261** B 254** A S.D. 28.6 16.4 19.8 11.8 6.8 N 10 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226A 240** A S.D. 28.6 16.4 19.8 11.8 6.8 N 10 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226A 240** A S.D. 28.6 16.4 19.9 12.2 6.8 N 10 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226A 240** A S.D. 28.6 17.6 19.9 12.2 6.8 N 10 10 10 10 10 10 10 DAY 56 MEAN 287** B 287** B 279** B 279** B 274* B 274* A S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 10 10 DAY 56 MEAN 288** B 287** B 279** B 279** B 279** B 270** B 270** B 270** B 270** A S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 10 10		DAY ()	MEAN	148 B	148 ^B	152**B	149 B	181**	*	
DAY 7 NEAN 182** B 181** B 182** B 177 B 203** S.D. 12.2 8.6 9.3 8.1 14.4 N 10 10 10 10 10 10 DAY 14 HEAN 208** 208** 204** 190ÅB 202** S.D. 15.4 11.8 11.6 10.8 10.1 N 10 10 10 10 10 10 DAY 21 HEAN 229** B 232** B 226** B 204Å 208** A S.D. 18.4 13.0 16.7 11.1 8.4 N 10 10 10 10 10 10 DAY 28 HEAN 249** B 249** B 243** B 210Å 221** Å S.D. 20.2 16.6 14.9 11.8 10.0 N 10 10 10 10 10 DAY 35 HEAN 262** B 261** B 254** B 216ÅB 231** Å S.D. 24.2 16.0 16.7 12.5 7.7 N 10 10 10 10 10 DAY 42 HEAN 278** B 273** B 261** B 254* Å S.D. 28.6 16.4 19.8 11.8 6.8 N 10 10 10 10 10 10 DAY 49 HEAN 284** B 279** B 265** B 226Å 240** Å S.D. 26.6 17.6 19.9 12.2 6.8 N 10 10 10 10 10 10 DAY 49 HEAN 284** B 279** B 265** B 226Å 240** Å S.D. 26.6 17.6 19.9 12.2 6.8 N 10 10 10 10 10 10 DAY 56 HEAN 287** B 287** B 279** B 267** B 226Å 242** Å S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 10 DAY 63 HEAN 298** B 295** B 277** B 250Å 247** Å S.D. 28.4 22.6 21.7 12.6 7.6		2							9.8		
DAY 7 NEAN 182** B 181** B 182** B 177 B 203** S.D. 12.2 8.6 9.3 8.1 14.4 N 10 10 10 10 10 DAY 14 HEAN 208** 208** 204** 190ÅB 202** S.D. 15.4 11.8 11.6 10.8 10.1 N 10 10 10 10 10 DAY 21 HEAN 229** B 232** B 226** B 204Å 208** Å S.D. 18.4 13.0 16.7 11.1 8.4 N 10 10 10 10 10 DAY 28 HEAN 249** B 249** B 243** B 210Å 221** Å S.D. 20.2 16.6 14.9 11.8 10.0 N 10 10 10 10 10 DAY 35 HEAN 262** B 261** B 254** B 216 ÅB 251** Å S.D. 24.2 16.0 16.7 12.5 7.7 N 10 10 10 10 10 DAY 42 HEAN 278** B 273** B 261** B 221 Å 254** Å S.D. 28.6 16.4 19.8 11.8 6.8 N 10 10 10 10 10 DAY 49 HEAN 284** B 279** B 265** B 226Å 240** Å S.D. 26.6 17.6 19.9 12.2 6.8 N 10 10 10 10 10 DAY 56 HEAN 287** B 287** B 270** B 227 Å 242** Å S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 DAY 63 HEAN 298** B 295** B 277** B 230Å 247** Å S.D. 28.4 22.6 21.7 12.6 7.6				N	10		10		10		
S.D. 12.2 8.6 9.3 8.1 14.4 N 10 10 10 10 10 10 DAY 14 MEAN 208** 208** 204** 190ÅB 202** S.D. 15.4 11.8 11.6 10.8 10.1 N 10 10 10 10 10 DAY 21 MEAN 229** B 252** B 226** B 20¼A 208** A S.D. 18.4 13.0 16.7 11.1 8.4 N 10 10 10 10 10 10 DAY 28 MEAN 249** B 249** B 243** B 210Å 221** Å S.D. 20.2 16.6 14.9 11.8 10.0 N 10 10 10 10 10 DAY 35 MEAN 262** B 261** B 254** B 216 ÅB 231** Å S.D. 24.2 16.0 16.7 12.5 7.7 N 10 10 10 10 10 10 DAY 42 MEAN 278** B 273** B 261** B 254** B 221 Å 234** Å S.D. 28.6 16.4 19.8 11.8 6.8 N 10 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226Å 240** Å S.D. 26.6 17.6 19.9 12.2 6.8 N 10 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226Å 240** Å S.D. 26.6 17.6 19.9 12.2 6.8 N 10 10 10 10 10 10 DAY 56 MEAN 287** B 287** B 270** B 270** B 270** A 242** Å S.D. 25.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 10 DAY 63 MEAN 298** B 295** B 277** B 230Å 247** Å S.D. 28.4 22.6 21.7 12.6 7.6		· nav 7	,		182++ B	181++ R	182±±B		203**		
DAY 14 HEAN 208** 208** 208** 204** 190AB 202** S.D. 15.4 11.8 11.6 10.8 10.1 N 10 10 10 10 10 10 DAY 21 MEAN 229** B 232** B 226** B 204A 208** A S.D. 18.4 13.0 16.7 11.1 8.4 N 10 10 10 10 10 10 DAY 28 MEAN 249** B 249** B 243** B 210A 221** A S.D. 20.2 16.6 14.9 11.8 10.0 N 10 10 10 10 10 DAY 35 MEAN 262** B 261** B 254** B 216 AB 231** A S.D. 26.4 2 16.0 16.7 12.5 7.7 N 10 10 10 10 10 10 DAY 42 MEAN 278** B 273** B 261** B 254** B 221 A 234** A S.D. 28.6 16.4 19.8 11.8 6.8 N 10 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226A 240** A S.D. 26.6 17.6 19.9 12.2 6.8 N 10 10 10 10 10 10 DAY 56 MEAN 287** B 287** B 279** B 277** B 270** B 274** A S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 10 DAY 63 MEAN 298** B 295** B 277** B 230A 247** A S.D. 28.4 22.6 21.7 12.6 7.6		י נאט								-	
S.D. 15.4 11.8 11.6 10.8 10.1 N 10 10 10 10 10 10 DAY 21 MEAN 229** B 232** B 226** B 204A 208** A 5.D. 18.4 13.0 16.7 11.1 8.4 N 10 10 10 10 10 10 10 DAY 28 MEAN 249** B 249** B 243** B 210A 221** A 5.D. 20.2 16.6 14.9 11.8 10.0 N 10 10 10 10 10 10 10 DAY 35 MEAN 262** B 261** B 254** B 216 AB 231** A 5.D. 24.2 16.0 16.7 12.5 7.7 N 10 10 10 10 10 10 DAY 42 MEAN 278** B 273** B 261** B 221 A 234** A 5.D. 28.6 16.4 19.8 11.8 6.8 N 10 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226A 240** A 5.D. 26.6 17.6 19.9 12.2 6.8 N 10 10 10 10 10 10 DAY 56 MEAN 287** B 287** B 270** B 227A 242** A 5.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 10 10 DAY 63 MEAN 298** B 295** B 277** B 230A 247** A 5.D. 28.4 22.6 21.7 12.6 7.6	•										
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DAY 28 MEAN 249** B 249** B 243** B 210A 221** A S.D. 20.2 16.6 14.9 11.8 10.0 N 10 10 10 10 10 DAY 35 MEAN 262** B 261** B 254** B 216 AB 231** A S.D. 24.2 16.0 16.7 12.5 7.7 N 10 10 10 10 10 DAY 42 MEAN 278** B 273** B 261** B 221 A 234** A S.D. 28.6 16.4 19.8 11.8 6.8 N 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226A 240** A S.D. 26.6 17.6 19.9 12.2 6.8 N 10 10 10 10 10 DAY 56 MEAN 287** B 287** B 270** B 227A 242** A S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 DAY 63 MEAN 298** B 295** B 277** B 230A 247** A S.D. 28.4 22.6 21.7 12.6 7.6		DAY 2	1	MEAN	229** B	232** B	226**B	204 A	208** A		
DAY 28 HEAN 249** B 249** B 243** B 210 A 221** A		ē		S.D.	18.4	13.0	16.7	11.1	8.4		
S.D. 20.2 16.6 14.9 11.8 10.0 N 10 10 10 10 10 10 DAY 35 MEAN 262** B 261** B 254** B 216 AB 231** A S.D. 24.2 16.0 16.7 12.5 7.7 N 10 10 10 10 10 10 DAY 42 MEAN 278** B 273** B 261** B 221 A 234** A S.D. 28.6 16.4 19.8 11.8 6.8 N 10 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226A 240** A S.D. 26.6 17.6 19.9 12.2 6.8 N 10 10 10 10 10 10 DAY 56 MEAN 287** B 287** B 270** B 227 A 242** A S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 10 DAY 63 MEAN 298** B 295** B 270** B 230 A 247** A S.D. 28.4 22.6 21.7 12.6 7.6				N .	10	10	10	10	10		
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DAY 35 MEAN 262** B 261** B 254** B 216 AB 231** A S.D. 24.2 16.0 16.7 12.5 7.7 N 10 10 10 10 10 DAY 42 MEAN 278** B 273** B 261** B 221 A 234** A S.D. 28.6 16.4 19.8 11.8 6.8 N 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226 A 240** A S.D. 26.6 17.6 19.9 12.2 6.8 N 10 10 10 10 10 DAY 56 MEAN 287** B 287** B 270** B 227 A 242** A S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 DAY 63 MEAN 298** B 295** B 277** B 230 247** A S.D. 28.4 22.6 21.7 12.6 7.6		•		S.D.							
DAY 35 MEAN 262** B 261** B 261** B 254** B 216 AB 231** A S.D. 24.2 16.0 10.1 10.10 10.10 10.10 DAY 42 MEAN 278** B 273** B 261** B 261** B 221 A 234** A S.D. 28.6 16.4 19.8 11.8 6.8 N 10.10 10.10 DAY 49 MEAN 284** B 279** B 265** B 266** B 226A 240** A S.D. 26.6 17.6 19.9 12.2 6.8 N 10.10 10.10 DAY 56 MEAN 287** B 287** B 287** B 270** A 242** A 244** A 24				N	10	10	10	10			
S.D. 24.2 16.0 16.7 12.5 7.7 N 10 10 10 10 10 DAY 42 MEAN 278** B 273** B 261** B 221 A 234** A S.D. 28.6 16.4 19.8 11.8 6.8 N 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226A 240** A S.D. 26.6 17.6 19.9 12.2 6.8 N 10 10 10 10 10 DAY 56 MEAN 287** B 287** B 270** B 227A 242** A S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 10 DAY 63 MEAN 298** B 295** B 277** B 230A 247** A S.D. 28.4 22.6 21.7 12.6 7.6		DAY 3	5	MEAN	262## B	261++ B	254++B	216 AB			
N 10 10 10 10 10 10 DAY 42 MEAN 278** B 273** B 261** B 221 A 234** A S.D. 28.6 16.4 19.8 11.8 6.8 N 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226A 240** A S.D. 26.6 17.6 19.9 12.2 6.8 N 10 10 10 10 DAY 56 MEAN 287** B 287** B 270** B 270** B 227 A 242** A S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 DAY 63 MEAN 298** B 295** B 277** B 230A 247** A S.D. 28.4 22.6 21.7 12.6 7.6			•								
DAY 42 MEAN 278** B 273** B 261** B 221 A 234** A S.D. 28.6 16.4 19.8 11.8 6.8 N 10 10 10 10 10 10 DAY 49 MEAN 284** B 279** B 265** B 226A 240** A S.D. 26.6 17.6 19.9 12.2 6.8 N 10 10 10 10 10 10 DAY 56 MEAN 287** B 287** B 270** B 227A 242** A S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 DAY 63 MEAN 298** B 295** B 277** B 230A 247** A S.D. 28.4 22.6 21.7 12.6 7.6			-								
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DAY 49 MEAN 284** B 279** B 265** B 226A 240** A S.D. 26.6 17.6 19.9 12.2 6.8 N 10 10 10 10 10 DAY 56 MEAN 287** B 287** B 270** B 227A 242** A S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 DAY 63 MEAN 298** B 295** B 277** B 230A 247** A S.D. 28.4 22.6 21.7 12.6 7.6		DAY 4	2 .	MEAN		273** B			234** A		
DAY 49 MEAN 284** B 279** B 265** B 226A 240** A S.D. 26.6 17.6 19.9 12.2 6.8 N 10 10 10 10 10 DAY 56 MEAN 287** B 287** B 270** B 227A 242** A S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 DAY 63 MEAN 298** B 295** B 277** B 230A 247** A S.D. 28.4 22.6 21.7 12.6 7.6											•
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DAY 56 MEAN 287** B 287** B 287** B 270** B 227A 242** A S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 DAY 63 MEAN 298** B 295** B 277** B 230A 247** A S.D. 28.4 22.6 21.7 12.6 7.6									6.8		
S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 10 DAY 63 MEAN 298** B 295** B 277** B 230A 247** A S.D. 28.4 22.6 21.7 12.6 7.6		•		N	10	10	10	10	10		
S.D. 23.1 17.4 21.7 11.9 8.7 N 10 10 10 10 10 10 DAY 63 MEAN 298** B 295** B 277** B 230A 247** A S.D. 28.4 22.6 21.7 12.6 7.6		DAY 54		MEAN	287++ B	287++ B	27044B	337 Å .	2/2++ A		•
N 10 10 10 10 10 10 DAY 63 MEAN 298** B 295** B 277** B 230A 247** A S.D. 28.4 22.6 21.7 12.6 7.6											
DAY 63 MEAN 298** B 295** B 277** B 230 A 247** A S.D. 28.4 22.6 21.7 12.6 7.6											
S.D. 28.4 22.6 21.7 12.6 7.6											
		DAY 63	;	MEAN	298** B	295** B	277**B	230A	247** A		
N 10 10 10 10 10				S.D.		22.6	21.7	12.6		-	
. 10 10 10 10 10				N	10	10	10	10	10		•

P less than .05

Analysis of Variance using DUNCAN'S Procedure

P less than .01

A - Significance from control
B - Significance from 5F (pair fed)

	 		SUMMAR'	Y OF BOD	Y WEIGHT	S (Grams)			
	 S	TUDY: YJ8190	F .		SEX:	FEMALE	·	PAGE:	2
		DOSE: (ppm)	0	500	1000	2000	0	•	
	PERIOD	· · · · · · · · · · · · · · · · · · ·	1-F	2-F	3-F	4 –F	5-F		·
	 			296** B	280** B	A ese	249** A		
	DAY 70	MEAN	307** ^B		23.1	12.8	7:1		•
		S.D.	27.6	23.8 10	10	10	10		
		N	10	10	10	10	10		
	DAY 77	MEAN	314** B	302** B	282** B	234 AB	254** A	•	
		S.D.	28_1		25 1	12.0	6.4		
		N	10	10	10	10	10		
		. "							
	DAY 83	MEAN			 "		282		
		S.D.	 .				12.0	+.	
•		N .	Ð-	0	0	0	10		
			· · · _		<u>.</u>				
	DAY 84	MEAN	315** B	306** ^B	284**B	•	258** A	1	
		S.D.	33.6	22.9	24.1	13.5	7.3		
	=	, N	10	10	10	10	10		
	 		321** B	314** B	286**B	236 AB	259** A		٠
-	DAY 90	MEAN		22.6	25.9	12.7	8.6		
		S.D.	29.6 10	10	10	10	10		
		N	IU	IU,	10	10			
	DAY 91	MEAN	323** B	315** B	289**B	237			•
		S.D.	31.1	23.7	26.4	12.9			
	· · · · · · · · · · · · · · · · · · ·	N	10	10	10	10	. 0		

t P Less than .05

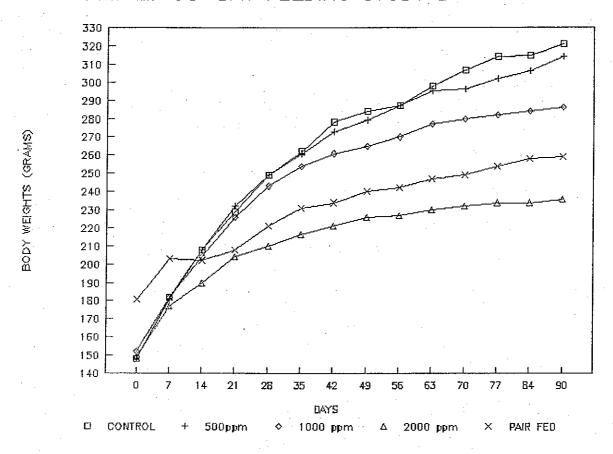
^{**} P less than .01

^{-- =} Data Unavailable

A - Significance with control group (1-F)

B - Significance with pair Fed group (5-F)

FEMALE 90-DAY FEEDING STUDY BODY WEIGHT



		STUDY:	4A2N'	 r-m		SEX:	MALE		PAGE:	1	
			OSE: (ppm	-	500	1000	2000	0			
	PERIOD		ROUP:	1–#	2-M	3-M	4-M	5-M			
			- -							•	
	DAY 7	· ·	1EAN	9** B	9**B	9** B					
		9	s.D.	0.6	0.6	0.8	1.3	0.6			
		· · · · · ·	()	10	10	10	10	10			
				au R	7**B	7* * B	4 A	3 A			
	DAY. 14		1EAN	8** B	ريمير 0.7	0.9	1.2	0.7			
			6.D.	2.7 10	10	10	10	10			
			4	10	10						
	DAY 21		1EAN	5** B	6 ** B	6** B	зА	3 A			
	VAT 21		S.D.	2.4	0.9	1.3	1.1	0.7			
			1	10	10	10	10	10			
	•				•						
	DAY 28	ŀ	1EAN	4 **	3 **	3**	2 AB	3 **			
		5	S.D.	0.8	0.7	1.1	1.2	0.4			
			1	10	10	10	10	10			
						A	o AT	7.4.+ A	:		
•	DAY 35	ŀ	(EAN	4** B	4 **	3** A	2 AB	3**A 0.3			
			5.D.	0.9	0.6	1.7	0.8 10	10			
		t		10	10	10	10	. 10			
	N4V /7		1EAN	4** B	3 **B	2A	2 A	2 A			
-	DAY 42		1EAN 5.D.	0.8	0.8	1.0	1.0	0.5			
			1	10	10	10	10	10			
		•	•								
	DAY 49		IEAN	3** B	2** AB	2** AB	1 A	1 A			
			5.D.	0.7	1.0	0.4	0.6	0.5			
•			4	10	10	10	10	10			
						* .					
e.	DAY 56		IEAN	2**	2**	1**	-0 A	1**			
•		5	5.0.	0.6	1.1	9.7	. 1.1	0.3			
		ŀ	ĺ	10	10	10	10	10	•		
				P	Δ	1** A	_0 AB	2 ** A			
	DAY 63		IEAN	3** B	2**A		0.9	0.8			
			S.D.	0.6	0.8	0.8 10	10	10			
		•	ł .	10	10	IU	IV	10			
	D#Y 70		IEAN	2** B	1** A	1** A	_0 AB	1** A	1		
	DAY 70		EAN S.D.	0.3	0.6	0.9	1.2	0.5			
		•	J. U.	0.5			10	10			

A - Significance with control group (1-M)

P less than .05 P less than .01

B - Significance with pair Fed group (5-M)

		s	UMMARY	OF DAIL	WEIGHT	GAINS (Gra	ms)	
	STU	DY: 4A2NT-	М		SEX	: MALE		PAGE: 2
		DOSE: (ppm)	~ 0	500 .	1000	2000	0	
	PERIOD	GROUP:	1-M	2-M	3-M	4-M	5-M	
	·							
	DAY 77	MEAN	2**	1 *	1 A	1 AB	1 *	
		S.D.	0.6	0.8	0.6	0.7	0.5	
		N	10	10	10	10	10	
	DAY 83	MEAN					7	42/6 day
		S.D.	·	 ·			1.1	42-33 = 9g for 7 day
		И	0	0 -	0	0 .	10	78 101 (da)
	DAY 84	MEAN	2**	1 **	0**	O **	-33	-33/1 day 1.28/day
No	significance	S.D.	0.7	0.7	0.5	8.0	6.7	35, 2 day 1.20, day
	s de la companya de l	N	10	10	10	10	10	
	DAY 90	MEAN	2 *	1	0 A	0 A	1	
	•	S.D.	0.7	2.8	1.0	0.9	0.7	
		N .	10	10	10	10	10	

P less than .05

P less than .01

^{-- =} Data Unavailable

A - Significance with control group (1-M) B - Significance with pair Fed group (5-M)

		S	UMMARY (OF DAILY	WEIGHT	GAINS (Gran	s)	
	ST	UDY: YJ8190	F'		SEX:	FEMALE		PAGE: 1
		DOSE: (ppm)	0 -	500	1000	2000	0	
	PERIOD	GROUP:	1-F	2-F	3-F	4-F	5-F	
	DAY 7	MEAN	5** B	- 5** B	4	4	з А	
	• • • • • • • • • • • • • • • • • • • •	S.D.	0.7	0.9	1.7	0.8	1.2	
		N	10	10	10	10	10	•
	DAY 14	MEAN	4 ★★ B	4** B	3**B	2** AB	-0 A	
	DATE 14	S.D.	0.8	1.1	0.9	0.7	1.2	
		N	10	10	10	10	. 10	
				_		- 1 17		
	DAY 21	MEAN	3** B	-	3**B	2 * AB	1 A	
•		S.D.	0.6	0.7	1.2	0.8	0.7	
		N	10	10	10	10	10	
	DAY 28	MEAN	3**	2**	2**	1AB	2 *	
		S.D.	1.7	1.1	1.1	0.6	0.6	
		N	10	10	10	10	10	
	DAY 35	MEAN	2**	2 *	2 *	1A	1	+ 2
		S.D.	1.2	1.1	0.7	0.4	0.7	
**		· N	10	10	10	10	10	
	DAY 42	MEAN	2** B	2** B	1 A	1A	1 A	
	DA1 42	S.D.	0.9	0.7	1.1	0.5	0.5	
		N	10	10	10	10	10	
		••						
	DAY 49	MEAN	1	1 -	0	1	1.	
	•	S.D.	0.9	0.9	0.8	0.5	0.6	
		N	10	10	10	10	10	
* .			_		_	•		
	DAY 56	MEAN	1 .	1 A 1 B	1	0	0	
•		S.D.	1.0	0.6	0.7	0.8	0.5 10	•
		N	10	10	10	10	10	
	DAY 63	MEAN	2 * B	1 *	1	1	.1	
		S.D.	1.3	0.7	0.7	0.7	0.5	•
•		N	10	10	10	10	10	
		MEAN	1** B	-0 A J	1 * A	0 10	0 A	
	DAY 70	MEAN		-0 AJ 1.0	0.7	0.5	0.4	_
	•	S.D.	0.8	. 10	10	10	10	-
		И	10	· IU	Ю	10	.0	

P less than .05

P less than .01

A - Sig with control
B - Sig with group 5 (pair fed)

APPENDIX L

		S	UMMARY	OF DAILY	WEIGHT	GAINS (Gr	ams)	
	STUDY: YJ8190F				SEX: FEMALE			PAGE: 2
	PERIOD	DOSE: (ppm) GROUP:	0 1-F	500 2-F	1000 3-F	2000 4-F	0 5-F	
						<u> </u>	·- -	
	DAY 77	MEAN	1 *	1 *	o A	0	1	
e de la companya del companya de la companya del companya de la co		S.D.	0.7	1.1	0.8	0.4	0.3	
		N	10	10	10	10	10	•
	DAY 83	MEAN		·	;		5	6x5 = 30g/6 days
		S.D.					1.7	30-24 = 6g
		N	0	0	0	0	10	
	DAY 84	MEAN	0**	1**	0**	: -0**	-24 lg	
		S.D.	1.1	1.0	1.0	0.8	9.9	
		N	10	10	10	10	10	
	DAY 90	MEAN	1 *B	1** B	0	0	OΑ	
		S.D.	1.0	1.0	1.1	8.0	0.6	
		N	10	10	10	10	10	•
						-		
	DAY 91	MEAN	2	2	3	1		
**	1	S.D.	6.5	4.4	4.6	2.3		
	•	. N	10	10	10	10	0	

P less than .05

Analysis of Variance using DUNCAN'S Procedure

P less than .01

⁼ Data Unavailable

A - Significance with control group (1-F) B - Significance with pair Fed group (5-F)

APPENDIX M

CLINICAL CHEMISTRY

90 DAY FEEDING STUDY

4-AMINO, 2-NITROTOLUENE (4A2NT)

STUDY NO. 55-YJ81-91

MALE

DOSE		SGOT	SGPT	GLUCOSE	BUN	ALKPHOS
1 Оррт	mean	112.00	41.00	123.00	17.40	359.00
	std	18.50	7.10	14.80	1.80	80.00
	sem	5.85	2.25	4.68	0.57	25.30
2 *Oppm	mean	108.00	33.00	146.00	11.10 A	233.00
	std	74.90	6.40	29.00	2.10	90.00
	sem	23.69	2.02	9.17	0.66	28.46
3 500ppm	mean	106.00	35.00	125.00	17.60 B	258.00
	std	12.30	3.80	10.20	2.00	88.00
	sem	3.89	1.20	3.23	0.63	27.83
4 1000ppm	mean	122.00	47.00	150.00	17.00 B	296.00
	std	43.20	22.90	15.30	1.60	115.00
•	sem	13.66	7.24	4.84	0.51	36.37
5 2000ppm	mean	121.00	50.00	195.00 AB	15.10 AB	400.00 B
	std	36.40	16.90	64.60	2.80	148.00
	sem	11.51	5.34	20.43	0.89	46.80

^{*-} RESTRICTED DIET GROUP

p= 0.05

A- SIGNIFICANCE WITH GROUP 1 (CONTROL)

B- SIGNIFICANCE WITH GROUP 2 (RESTRICTED DIET)

CLINICAL CHEMISTRY 90 DAY FEEDING STUDY 4-AMINO, 2-NITROTOLUENE (4A2NT) STUDY NO. 55-YJ81-91 MALE

DOSE		T.BILI	CALCIUM	T. PRO	TRIG	CHOL
1 Oppm	mean	0.34	10.00	7.60	320.00	74.90
1 Oppm	std	0.27	0.31	0.28	48.30	10.60
	sem	0.09	0.10	0.09	15.27	3.35
2 *Oppm	mean	0.28	1 0: 90 : 5∫	6.90 A	, 164.00 A	62.10
pp	std	0.05	0.47	0.40	26.10	6.90
	sem	0.02	0.15	0.13	8.25	2.18
3 500ppm	mean	0.40	9.70 B	7.20 B	295.00 B	71.80
2 200Fh	std	0.20	0.41	0.36	58.70	10.80
	sem	0.06	0.13	0.11	18.56	3.42
4 1000ppm	mean	0.53 8	10.70 A	7.70 B	324_00 B	93.50 AB
, -	std	0.17	0.48	0.40	80.70	15.80
	sem	0.05	0.15	0.13	25.52	5.00
5 2000ppm	mean	0.50 B	11.40 AB	7.50 B	464.00 AB	110.80 AB
	std	0.20	0.56	0.38	176.80	23.80
	sem	0.06	0.18	0.12	55.91	7.53
*- RESTRIC	TED DIE	T GROUP				
ncoint.				•		

A- SIGNIFICANCE WITH GROUP 1 (CONTROL)

p= 0.05

B- SIGNIFICANCE WITH GROUP 2 (RESTRICTED DIET)

CLINICAL CHEMISTRY
90-DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
FEMALE

DOSE		SGOT	SGPT	GLUCOSE	BUN	ALKPHOS
1 Oppm	mean	134.70	49.67	125.57	20.04	266.18
* * *	std	42.08	20.57	7.81	2.39	81.25
	sem	13.31	6.50	2.47	0.76	25.69
2 * 0ppm	mean	163.70	30.43 A	127.78	13.11 A	121.55 A
•	std	168.87	13.72	23.01	3.49	54.62
	sem	53.40	4.34	7.28	1.10	17.27
3 500ppm	mean	105.50	44.07	119.05	18.32 B	216.05 B
	std	33.45	17.52	6.81°	2.14	76.57
	sem	10.58	5.54	2.15	0.68	24.21
4 1000ppm	mean	82.20	30.95 A	131.17	17.16 AB	161.89 A
	std	16.33	5.17	15.43	2.11	44.87
	sem	5.16	1.63	4.88	0.67	14.19
5 2000ppm	mean	74.70	27.57 A	147.20 AB	16.83 AB	73.11 A
	std	18.79	5.23	9.50	2.55	148.00
	sem	5.94	1.65	3.00	0.81	46.80

^{*-} RESTRICTED DIET GROUP

A- SIGNIFICANCE FROM GROUP 1 (CONTROL)

B- SIGNIFICANCE FROM GROUP 2 (RESTRICTED DIET)

p= 0.05

CLINICAL CHEMISTRY
90-DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
FEMALE

DOSE		T.BILI	CALCIUM	T.PRO	TRIG	CHOL
		0.40	10.25	7.79	270.68	82.16
1 Oppm	mean	0.48	0.60	0.60	48.28	7.23
	std sem	0.17 0.05	0.19	0.19	15.27	2.29
2 * 0ppm	mean	0.30	10_67	7.15	108.09 A	72.10
- , vrr	std	0.08	0.27	0.49	25.53	14.76
•	sem	0.03	0.09	0.15	8.07	4.67
3 500ppm	mean	0.46	10.51	7.65	282.84 B	84.97
3 300pp	std	0.08	0.83	0.55	74.05	9.87
	sem	0.03	0.26	0.17	23.42	3.12
4 1000ppm	mean	0.53	10.95	7.49	203.37 В	80.99
4 1000ppiii	std	0.53	0.65	0.48	56.07	15.16
	sem	0.17	0.21	0.15	17.73	4.79
5 2000ppm	mean	1.12 AB	12.38 AB	7.84	471.63 AB	97.19 B
	std	1.18	0.68	0.59	146.93	23.45
	sem	0.37	0.22	0.19	46.46	. 7.42
			•			

^{*-} RESTRICTED DIET GROUP

p=0.05

A- SIGNIFICANCE FROM GROUP 1 (CONTROL)

B- SIGNIFICANCE FROM GROUP 2 (RESTRICTED DIET)

APPENDIX N

HEMATOLOGY
90 DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
MALE

DOSE		мснє	мсн	нст	MCA
	•	•	•		•
1 Oppm	mean	35.2	17.9	43.6	50.8
	std	0.7	0.6	2.0	2.2
	sem	0.2	0.2	0.6	0.7
2 *Oppm	mean	35.4	18.1	44.5	51.0
	std	0.7	0.4	0.6	0.8
	sem	0.2	0.1	0.2	0.3
3 500ppm	mean	34.8	17.8	42.6	51.1
· .	std	0.6	0.6	2.2	2.0
	sem	. 0.2	0.2	0.7	0.6
4 1000ppm	mean	3 5.5	18.7 A	42.7	52.6
	std	1.2	0.8	2.0	1.8
	sem	. 0.4	0.2	0.6	0.6
5 2000ppm	mean	34.7	18.5 A	40.0 AB	53.5 AB
	std	0.7	0.6	4.6	2.2
	sem	0.2	0.2	1.5	0.7
	-				

^{*-} RESTRICTED DIET GROUP

A- SIGNIFICANCE WITH GROUP 1 (CONTROL)

p= 0.05

B- SIGNIFICANCE WITH GROUP 2 (RESTRICTED DIET)

HEMATOLOGY
90 DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
MALE

DOSE		PLT	WBC	RBC	HGB
			•		•
1 Oppm	mean	1070.0	12.3	8.6	15.3
,	std	117.9	3.2	0.4	0.5
	sem	37.3	1.0	0.1	0.2
5 *Oppm	mean	1093.0	6.9 A	8.7	15.8
5 · Opp	std	94.1	2.1	0.2	0.3
	sem	29.7	0.7	0.1	0.1
			45.0.0	8.4	14.8
2 500ppm	mean	1060.0	15.0 B		0.8
	std	120.4	3.5	0.5	0.3
	sem	38.1	1.1	0.2	0.5
3 1000ppm	mean	1121.0	16.8 AB	8.1	15.1
	std	232.1	1.5	0.3	0.5
·	sem	73.4	0.5	0.1	0.2
4 2000ppm	mean	1177.0	17.0 AB	7.5 AB	13.9 AB
4 2000ppiii	std	326.5	5.3	0.9	1.6
·	sem	103.3	1.7	0.3	0.5
*- RESTRIC			CONTROL 3	÷	p= 0.05
			(CONTROL)		p= 0.05
B- SIGNIF:	ICANCE W	TIH GROUP 2	(RESTRICTED DIET)		F 3.05

HEMATOLOGY 90-DAY FEEDING STUDY 4-AMINO, 2-NITROTOLUENE (4A2NT) STUDY NO. 55-YJ81-91 FEMALE

DOSE		PLT	WBC	RBC	HGB
	-				
1 Оррп	mean	1083	7.04	7.77	15.26
	std	151.4	2.3	0.3	0.5
	sem	47.9	0.7	0.1	0.1
2 *Oppm	mean	942.0	6.2	8.3 A	15.4 A
	stď	355.1	2.8	0.4	0.7
	sem	112.3	0.9	0.1	0.2
3 500ppm	n mean	911.0	8.0	7.5 B	14.8 B
	std	171.6	2.6	0.2	0.6
	sem	54.3	0.8	0.1	0.2
			•		
4 10,00pp	mean	1120.0	8.8	. 7.2 AB	14.3 AB
	std	195.0	2.4	0.4	0.6
	sem	61.7	0.7	0.1	0.2
5 2000ppm	mean	1118.0	12.3 AB	6.5 AB	13.3 AB
	std	241.7	4.4	0.4	0.3
	sem	76.4	1.4	0.1	0.1
*- RESTRI	CTED DIE	T GROUP			
A- SIGNIF	ICANCE F	ROM GROUP 1 (COM	(TROL)		p= 0.05
D CTCNTE	ICANCE E	OW COULD 2 (DE	STRICTED DIET)		n= 0.05

B- SIGNIFICANCE FROM GROUP 2 (RESTRICTED DIET)

HEMATOLOGY
90-DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
FEMALE

DOSE		MCH ·	MCV	нст	MCHC
•		•			
1 Oppm	mean	19.66	53.41	41.48	36.78
•	std	0.5	1.3	1.5	0.5
	sem	0.2	0.4	. 0.5	0.2
2 * Oppm	mean	18.5 A	53.7	44.6 A	34.6
	std	0.5	1.6	2.3	0.8
	sem	0.2	0.5	0.7	0.2
3 500ppm	mean	19.8 B	55.1 B	41.1 B	36.0
	std	0.3	1.5	2.1	0.5
•	sem	0.1	0.5	0.7	0.2
4 1000ppm	mean	19.8 B	56.0 AB	40.5 B	33.4
	std	0.8	1.9	2.8	6.7
	sem	0.3	0.6	0.9	2.1
5 2000ppm	mean	20.7 AB	57.6 AB	37.2 AB	35.9
	std	1.0	1.5	1.9	1.5
	sem	0.3	0.5	0.6	0.5
*- RESTRIC	TED DIET	GROUP			
-		OM GROUP 1 (CON	TROL)		p= 0.05
	-	OM GROUP 2 (RES		•	p= 0.05
_ 010,11			==		

APPENDIX O

ORGAN TO BRAIN WEIGHT RATIO 90 DAY FEEDING STUDY 4-AMINO, 2-NITROTOLUENE (4A2NT) STUDY NO. 55-YJ81-91

DOSE	•	LIVER	KIDNEY	ADRENAL	SPLEEN	GONAD
•		BRAIN	BRAIN .	BRAIN	BRAIN	BRAIN
	•		·			
1 Оррт	mean	9.80	1.94	0.0450	0.40	1.64
	std	0.47	0.18	0.0200	0.07	0.08
	sem	0.15	0.06	0.0063	0.02	0.03
2 *Oppm	mean	6.20 A	1.59 A	0.0350	0.31 A	1.77
	std	0.47	0.10	0.0060	0.04	0.15
	sem	0.15	0.03	0.0019	0.01	0.05
3 500ррт	mean	10.70 в	1.90 в	0.0520	0.40 B	1.78
	std	1.17	0.23	0.0190	0.14	0.20
	sem	0.37	0.07	0.0060	0.04	0.06
4 1000ppm	mean	11.80 AB	1.92 B	0.0440	0.43 B	1.74
	std	1.60	0.22	0.0140	0.06	0.85
•	sem	0.51	0.07	0.0044	0.02	0.27
5 2000ppm	mean	11.80 AB	2.00 B	0.0450	0.31 A	D.96 AB
	std	1.24	0.43	0.0190	0.04	0.22
	sem	0.39	0.14	0.0060	0.01	0.07

^{*-} RESTRICTED DIET GROUP

p= 0.05 ·

A- SIGNIFICANCE WITH GROUP 1 (CONTROL)

B- SIGNIFICANCE WITH GROUP 2 (RESTRICTED DIET)

ORGAN TO BODY WEIGHT RATIO
90 DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
MALE

DOSE		KIDNEY	GONAD BODY	. SPLEEN BODY	LIVER BODY	ADRENAL BODY	BRAIN BODY
						·	4
1 Оррт	mean	0.0075	0.0063	0.0016	0.0370	0.0002	0.0039
i oppii	std	0.0009	0.0002	0.0003	0.0016	0.0001	0.0002
	sem	0.0003	0.0001	0.0001	0.0005	0.0000	0.0001
		5 0077	0.0085	0.0015	0.0300 A	0.0002	0.0048 A
2 * Oppm	mean	0.0077	0.0007	0.0002	0.0022	0.0000	0.0001
	std sem	0.0006 0.0002	0.0002	0.0001	0.0007	0.0000	0.0000
3 500ppm	mean	0.0077	0.0072	0.0016	0.0440 AB	0.0002	0.0041 B
inddoor c	std	0.0008	0.0004	0.0005	0.0036	0.0001	0.0003
	sem	0.0002	0.0001	0.0002	0.0011	0.0000	0.0001
4.4000		A 0000	0.0080	0.0020 AB	0.0550 AB	0.0002	0.0046 A
4 1000ppm	mean	0.0088 0.0010	0.0040	0.0003	0.0086	0.0001	0.0004
	std sem	0.0003	0.0013	0.0001	0.0027	0.0000	0.0001
5 2000ppm	mean	0.0124 AB	0.0059 B	0.0020 AB	0.0720 AB	0.0003 AB	0.0062 AB
> Foodbbii	std	0.0034	0.0019	0.0002	0.0027	0.0001	0.0006
	sem	0.0011	0.0006	0.0001	0.0009	0.0000	0.0002

^{*-} RESTRICTED DIET GROUP

p= 0.05

A- SIGNIFICANCE WITH GROUP 1 (CONTROL)

B- SIGNIFICANCE WITH GROUP 2 (RESTRICTED DIET)

ORGAN TO BRAIN WEIGHT RATIO
90-DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
FEMALE

DOSE		SPLEEN BRAIN	LIVER BRAIN	ADRENAL BRAIN	OVARIES BRAIN	KIDNEY BRAIN
1 Оррт	mean	0.31	5.94	0.0532	0.10	1.23
	std	0.03	0.71	0.0089	0.01	0.13
•	sem	0.01	0.22	0.0028`	0.00	0.04
2 *Oppm	mean	0.27	3.66 A	0.0388 A	0.08 A	1.02 A
	std	0.03	0.36	0.0068	0.01	0.06
	sem	0.01	0.11	0.0022	0.00	0.02
3 500ppm	mean	0.31	6.42 B	0.0518 в	0.10 B	1.23 B
7 17 4	std	0.04	0.48	0.0083	0.02	0.08
•	sem	0.01	0.15	0.0026	0.00	0.03
4 1000ppm	mean	0.34 B	7.10 AB	0.0561 B	0.10 в	1.33 B
	std	0.06	1.28	0.0080	0.01	0.30
	sem	0.02	0.40	0.0025	0.00	0.09
F 2000		0.70	7.54.45	0.0487		4 97 -
5 2000ppm	mean	0.30	7.56 AB	0.0427 A	0.09	1.23 B
4.1	std	0.06	1.15	0.0047	0.02	0.11
	sem	0.02	0.36	0.0015	0.00	0.03

^{*-} RESTRICTED DIET GROUP

p= 0.05

A- SIGNIFICANCE FROM GROUP 1 (CONTROL)

B- SIGNIFICANCE FROM GROUP 2 (RESTRICTED DIET)

ORGAN TO BODY WEIGHT RATIO 90-DAY FEEDING STUDY 4-AMINO, 2-NITROTOLUENE (4A2NT) STUDY NO. 55-YJ81-91 FEMALE

DOSE	÷	ADRENAL BODY	OVARIES BODY	SPLEEN Body	LIVER BODY	BODY	BRAIN BODY
			•		0.0757	0.0074	0,0061
1 Оррт	mean	0.0003	0.0006	0.0019	0.0357	0.0007	0.0002
•	std	0.0001	0.0001	0.0002	0.0032		0.0001
	sem	0.0000	0.0000	0.0001	0.0010	0.0002	d.0001
2 *Oppm	mean	0.0003	0.0006	0.0020	0.0277 A	0.0077	0.0076 AB
z "oppiii	std	0.0001	0.0001	0.0002	0.0030	0.0005	0.0001
	sem	0.0000	0.0000	0.0001	0.0009	0.0002	0.0000
7 500		0.0007	0.0007	0.0020	0.0410 B	0.0078	0.0064 B
3 500ppm	mean	0.0003	0.0001	0.0002	0.0022	0.0004	0.0003
	std	0.0001		0.0001	0.0007	0.0001	0.0001
	sem	0.0000	0.0000	0.0001	0.0001	2.2	
4 1000ppm	mean	0.0004 B	0.0007	0.0023 AB	0.0492 AB	0.0093	O.0069 AB
	std	0.0001	0.0001	0.0004	0.0143	0.0033	0.0004
	sem	0.0000	0.0000	0.0001	0.0045	0.0010	0.0001
er		0.0007	n nano an	0.0025 AB	0.0631 AB	0.0103 AB	0.0083 AB
5 2000ppm	mean	0.0004	0.0008 AB	0.0004	0.0126	0.0011	0.0006
	std	0.0000	0.0002		0.0040	0.0004	0.0002
	sem	0.0000	0.0000	0.0001	0.0040	0.000-	J. 333
*- RESTRIC	TED DIE	T GROUP			· 0.0E		

A- SIGNIFICANCE FROM GROUP 1 (CONTROL)

B- SIGNIFICANCE FROM GROUP 2 (RESTRICTED DIET)

p=0.05

p = 0.05

BODY WEIGHT, WEIGHT GAIN
90-DAY FEEDING STUDY
4-AMINO, 2-NITROTOLUENE (4A2NT)
STUDY NO. 55-YJ81-91
FEMALE

DOSE		FINAL	WEIGHT
1.		BODY	GAIN
			٠
1 Oppm	mean	322.90	173.00
	std	31.15	
	sem	9.85	
		•	
2 *OPPM	mean.	258.70 A	166.00
	std	8.60	
	sem	2.72	
		•	
3 500ppm	mean	315.40 B	134.00
	std	23.70	
	sem	7.49	
4 1000ppm	mean	289.30 AB	87.00
	std	26.40	
	sem	8.35	
E : 20000	ma a b	237.20 AB	78.00
5 2000ppm	mean	and the second s	70.00
	std	12.90	
-	sem	4.08	

*- RESTRICTED DIET GROUP

A- SIGNIFICANCE FROM GROUP 1 (CONTROL)

B- SIGNIFICANCE FROM GROUP 2 (RESTRICTED DIET)

p= 0.05

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US ARMY ENVIRONMENTAL HYGIENE AGENCY

4-AMINO, 2-NITROTOLUENE (4A2NT) 90-DAY FEEDING STUDY IN RATS

PROJECT NO. 55-YJ81-91

REPORT DATE: 04JUN93

SUBMITTED BY:

George A. Parker, DVM
Diplomate, American College
of Veterinary Pathologists

US ARMY ENVIRONMENTAL HYGIENE AGENCY

4-AMINO, 2-NITROTOLUENE (4A2NT) 90-DAY FEEDING STUDY IN RATS

PROJECT NO. 55-YJ81-91

GOOD LABORATORY PRACTICES COMPLIANCE STATEMENT

Histopathologic examination and those phases of microslide preparation completed by Biotechnics were performed in compliance with in-house Standard Operating Procedures; 21 CFR Part 58- Good Laboratory Practice for Nonclinical Laboratory Studies; 40 CFR Part 792- Toxic Substance Control Act (TSCA): Good Laboratory Practice Standards; and 40 CFR Part 160- Federal Insecticide, Fungicide and Rodenticide Act (FIFRA): Good Laboratory Practice Standards.

Catherine A. Picut VMD JD.
Catherine A. Picut, VMD, JD
Diplomate, American College
of Veterinary Pathologists

US ARMY ENVIRONMENTAL HYGIENE AGENCY

4-AMINO, 2-NITROTOLUENE (4A2NT) 90-DAY FEEDING STUDY IN RATS

PROJECT NO. 55-YJ81-91

PATHOLOGY REPORT

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SPONSOR:

US ARMY ENVIRONMENTAL HYGIENE AGENCY

MATERIAL:

4-amino, 2-NITROTOLUENE (4A2NT)

SUBJECT:

Pathology Report

90-Day Feeding Study in Rats

USAEHA Project No. 55-YJ81-91

This narrative summarizes histopathologic findings in 100 Sprague-Dawley rats from a 90-day feeding study of 4-amino, 2-nitrotoluene (4A2NT).

METHODOLOGY

We received trimmed, formalin-fixed tissues in plastic process/embed cassettes that were labelled with the Pathology Branch accession number. Accompanying the tissues were trimming record sheets that listed the number of tissues that were trimmed, and a record of gross necropsy observations in each rat. The dosage groups were not known to the histopathologist until after the initial histopathologic examination was completed. After the initial histopathologic examination was completed, the study protocol revealed three treated groups, each consisting of 10 male and 10 female rats, that had received 500, 1000, or 2000 ppm of the test material in the feed. A group of 10 each male and female rats served as concurrent controls, and an additional group of 10 each male and female rats served as a second control group given a restricted diet that was quantitatively matched to the diet consumed by the 2000 ppm group.

The fixed tissue specimens were processed via standard histology techniques, embedded in paraffin, sectioned at approximately six microns, stained with hematoxylin and eosin, and examined via light microscopy. A

record of tissues examined and histopathologic findings were entered in a computer-assisted data retrieval system at the time of histopathologic examination. Tables generated from those entries constitute the basis for this narrative summary.

A small number of tissues were missing due to laboratory errors or sectioning difficulties. The number of missing tissues did not interfere with evaluation of the effects of compound administration. The microscopic sections were of adequate size and quality to allow critical histopathologic evaluation.

RESULTS

All animals survived to the scheduled termination of the study.

Males from the 1000 and 2000 ppm dosage groups had a moderate to high incidence of testicular hypospermatogenesis. The lesion consisted of reduction in spermatogenesis in a large number of seminiferous tubules, with many affected tubules containing only Sertoli cells. The lesion tended to be patchy within the testis, with some tubules severely affected and other tubules spared. Epididymides of affected testes often had a reduced content of maturing spermatozoa, which was recorded as hypospermia. Testes of two additional males from the 1000 ppm group had mild dilatation of seminiferous tubules. Testicular hypospermatogenesis and epididymal hypospermia are seen with some frequency as an incidental finding in laboratory rats, but the incidence pattern in this study indicates an association with administration of the test material.

All dosage groups except the restricted diet group had a high incidence of cytoplasmic vacuolization of hepatocytes, but the vacuolization was distinctly more pronounced in the treated males and somewhat more pronounced in the treated females. The change consisted of indistinctly bound cytoplasmic vacuoles, morphologically similar to postprandial glycogen and fat accumulation. In some rats the vacuolization was more prominent in the periportal region, while in others the change was distributed throughout the liver. Presence of the change in the control group suggests the vacuolization was due in part to postprandial accumulation of glycogen and fat, but the increased severity in rats that received the test material suggests compound-related accentuation of the change.

It would be helpful to perform stains for fat and glycogen on any remaining liver specimens, if further definition of the liver change is necessary. The hepatocellular changes may be associated with alterations in organ weights, and may be associated with increases in liver-related serum enzymes if the changes have advanced to the stage that cellular membranes are damaged or there is obstruction to bile outflow. Careful analysis of the organ weight and clinical pathology data is indicated to determine the extent and significance of the morphologic changes in the liver. Morphometric analysis of hepatocellular volume may also be indicated.

Males from the 1000 ppm group, and males and females from the 2000 ppm group, also had a low incidence of trace-level subacute inflammation in the liver. The lesion consisted of infiltrations of lymphocytes and a few neutrophils around biliary tracts. The lesion was judged to be of little clinical significance but, coupled with the vacuolization of hepatocytes, was interpreted as evidence of mild hepatotoxicity.

Males of the 2000 ppm group had a high incidence of cardiomyopathy, and a similar lesion was noted in the heart of 1/10 males from the 1000 ppm group. The lesion consisted of focal or multifocal degeneration of cardiac myofibers, often with a concurrent infiltration of lymphocytes and proliferation of Anitschkow myocytes. Cardiomyopathy is a common incidental finding in laboratory rats, particularly males, but usually is graded as trace-level in rats of this age. The incidence pattern and severity seen in this study suggest an association with compound administration in males.

Remaining lesions were considered to be incidental findings or part of spontaneous disease complexes of laboratory rats. Brief descriptive summaries of those lesions follows.

Microgranulomas in the liver consisted of focal or multifocal aggregations of lymphocytes and histiocytes. Lesions of this type are very common in laboratory rodents, and are suspected to be due to bacterial showering from the gastrointestinal tract.

Interstitial inflammation in the lung consisted of focal or multifocal thickening of alveoli with minimal associated lymphocytic infiltration, and sometimes included aggregations of alveolar macrophages. Lesions which consisted purely of alveolar macrophage aggregates were recorded as alveolar histiocytosis, though both types of lesions were considered to be part of the same pathologic process. Lesions of this type are commonly seen in laboratory rats, and may be due to aspiration of minor irritants or sialodacryoadenitis virus infection.

Embryonic remnants in the thyroid gland consisted of small, centrally located cystic structures that were lined by squamous epithelium. The structures are considered to be remnants of the thyroglossal duct system.

Cardiomyopathy consisted of degeneration of ventricular myofibers and an associated proliferation of endomysial fibrous connective tissue.

Cardiomyopathy is a common incidental finding in laboratory rats, particularly males, but is of unknown pathogenesis.

Hydronephrosis is a common observation in the kidneys of laboratory rats, particularly in the right kidney, and may reflect a partial obstruction of the right ureter as it passes the great vessels in the lumbar region.

There is evidence of a genetic influence on the incidence of hydronephrosis in laboratory rats.

Regeneration of renal tubular epithelium, interstitial inflammation, and accumulations of intratubular proteinic material are considered to be an early manifestation of spontaneous nephropathy syndrome, which is a very common spontaneous degenerative process of laboratory rats. The precise pathogenesis is unknown, but the incidence and severity are known to be influenced by protein content of the diet, total caloric content of the diet, and gender of the animals.

Subacute inflammation of the prostate consisted of focal or multifocal infiltrations of lymphocytes and a few neutrophils in the stroma of the prostate. Subacute prostatitis is a common incidental finding which has been attributed to various pathogens, but the precise pathogenesis remains largely unknown. One rat from the 2000 ppm group had severe chronic active inflammation of the prostate, which was considered to represent a severe manifestation of the spontaneous prostatitis seen in other rats.

Dilatation of the uterus, recorded as hydrometra in this study, is commonly seen in laboratory rats, and may represent a normal aspect of physiologic function.

Embryonic remnants in the pituitary gland consisted of small cystic cavities, some of which were lined by columnar epithelium. The lesions are compatible with cystic remnants of Rathke's pouch.

Spermatic granulomas were noted in the testis and epididymis of a small number of males. The lesions consisted of aggregations of spermatozoa surrounded by histiocytes. Changes of this type are a common incidental finding in young laboratory rats, and are presumed to be a result of "blind" testicular or epididymal ducts.

Focal or multifocal hemorrhage was noted in the thymus of a number of rats. Similar changes are commonly seen in both unscheduled and scheduled death animals, and are suspected to be agonal events. Small hemorrhages in the lung, heart, and pancreas were presumed to be of a similar pathogenesis. One male rat from the 2000 ppm group had severe renal hemorrhage and necrosis that were of unknown pathogenesis. The focal, unilateral nature of the lesion suggests it was not associated with administration of the test material.

Trace-level or mild subacute inflammation was noted in the pancreas of a small number of males. The lesions consisted of focal or multifocal infiltrations of lymphocytes and neutrophils, which were commonly located around pancreatic islets. The inflammation was considered to be an incidental finding, of uncertain pathogenesis.

The liver of one 2000 ppm male had mild focal coagulative necrosis.

Lesions of this type are seen as an incidental finding in laboratory rats,

therefore it was not possible to relate the single occurrence of

hepatocellular necrosis to administration of the test material.

CONCLUSIONS

This regimen of 4-amino, 2-nitrotoluene (4A2NT) was associated with testicular hypospermatogenesis (atrophy) and associated depletion of spermatozoa in the epididymides of rats from the 1000 and 2000 ppm dosage groups. Males from the 2000 ppm dosage group had a high incidence of cardiomyopathy that was more severe than that commonly seen in male rats of this age, suggesting a compound-related accentuation of a spontaneous disease process. All groups except the restricted diet group, including the control group, had a high incidence of hepatocellular cytoplasmic vacuolization. The severity of the hepatocellular vacuolization, particularly in males, was associated with the dosage of 4A2NT, suggesting administration of the test material resulted in hepatocellular changes that were morphologically similar to postprandial accumulation of glycogen and fat.

SUBMITTED BY:

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Study Number: 55-YJ81-91

Species: Rat

This report was printed on 06-09-1993.

<u>Tissue</u> / Diagnosis/	(Group	1	G	Group	2	Gr	oup	3	G	iroup	4
Modifier(s)		DOS	SAC		00S S.	AC	DO		AC		os	'
1047175(0)		003	JAC	L	/US 3/	нс	DO:	9 21	HL.	U	05	SAC
Total Animals		0	10		0	10	(o 1	10		0	10
Adrenal Cortex	(0)	(10)	(0) (10)	(() (1	10)	(0)	(10)
Within Normal Limits		0	10		0 '	10	() ′	10		Ð	10
Adrenal Medulla	(0)	(10)	(0) (9)	((D) (1	10)	(0)	(10)
Within Normal Limits		0	10		0	9	(,	10		0	10
<u>Aorta</u>	(0)	(5)	(0) (9)	(() (1	10)	(0)	(9)
Within Normal Limits		0	5		0	9	() ′	10		0	9
Bone Marrow, Femur	(0)	(10)	(0) (1	10)	((D) (1	10)	(0)	(10)
Within Normal Limits		0	10		0 '	10	. () 1	0		0	10
Brain, Cerebellum	. (0)	(10)	(0) (1	10)	(() (1	(0)	(0) ((10)
Within Normal Limits		0	10		0 ′	10	() 1	10		0	10
Brain, Cerebrum	(0)	(10)	(0) (1	(0)	(() (1	(0)	(0) ((10)
Within Normal Limits		0	10		0 1	10	() 1	0		0	10
Brain, Medulla Oblongata	(0)	(10)	(0) (1	10)	((D) (1	(0)	(0)	(10)
Within Normal Limits		0	10		0 1	10	() 1	0		0.	10
Brain, Midbrain	(0) ((10)	(0) (1	(0)	(() (1	0)	(0) ((10)
Within Normal Limits		0	10		0 1	0	C) 1	0		0	10
Brain, Pons	. (0)	(10)	(0) (1	0)	((0) (1	0)	(0) ((10)
Within Normal Limits		0	10		0 1	0	() 1	0		0	10
Duodenum	(0) ((10)	(0) (1	(0)	(()) (1	0)	(0) ((10)
Within Normal Limits		0	10		0 1	0	C) 1	0		0	10
<u>Epididymis</u>	(0) ((10)	(0) (9)	(()) (1	(0)	(0) ((10)
Hypospermia		0	0		0	0	C)	0		0	. 3
moderate		0	0		0	0	C)	0		0	1
severe		0	0		0	0	C)	0		0	2
Inflammation, granulomatous		0	0		0	0	C)	0		0	1
moderate		0	0		0	0	C)	0		0	1
Within Normal Limits		0	10		0 .	9	C) 1	0		0	7
Esophagus	(0) (9)	(0) (1	0)	(0	i) (1	0)	(0) ((10)
Within Normal Limits		0	9		0 1	0	C) 1	0		0 '	10
<u>Heart</u>	(0) ((10)	(0) (1	0)	(0	D. (1	0)	(0) ((10)
Cardiomyopathy		0	0		0	0	0		0		Q	1
mild		0	Q		0	0	0)	0		Ó	1
Hemorrhage		0	0		0	1	a)	0		0	0
mild		0	0		0	1	0	ł	0		0	0
Within Normal Limits		0	10		0	9 .	0	1	0		0	9
<u>Intestine</u>	(0) (9)	(0) (1	0)	(0) (1	0)	(0) (10)
Within Normal Limits		0	9		0 1	0	0	1	0		0	10

Titles:

Group 1 0 PPM

Group 2 0 PPM/RESTRICTED DIET

Group 3 500 PPM

Group 4 1000 PPM

All modifiers are printed.

() = Total Examined

DOS= Intercurrent Death(s)

SAC= Scheduled Euthanasia

Study Number: 55-YJ81-91

Species: Rat

This report was printed on 06-09-1993.

<u>Tissue</u> / Diagnosis/		Gro	up	1	Group 2			2	2 Group		υр	р 3		Grou	o 4	
Modifier(s)	-	DOS		SAC	•	DOS		SAC	-	DOS	 S	SAC	-	oos	SAC	
Total Animals		0	İ	10		0		10		0		10		0	10	
<u>Kidney</u>	. (. 0)	(10)	(0) ((10)	(0) (10)	(0)	(10)	
Inflammation, interstitial		0		1		0		0	•	0		0	`	0	1	
trace		0		1		0		0		0		0		0	1	
Intratubular proteinic material		0		0		0		Ö	•	0		1		0	2	
trace		0		0.		0		0		0		1		ō	2	
Regeneration, tubular		0		1		O		1		0		3		ō	3	
trace		0		1		0		1		ō		3		0	3	
Within Normal Limits		0		8		0		9		0		7		0	6	
<u>Liver</u>	() ((10)	C	_	(10)	(מ	(10)	(-	(10)	
Cytoplasmic vacuolization		0		10	·	0	•	0	•	0		10	`	0	10	
mild		Ö		8		Ō		Ö		Ö		2		0	0	
moderate		0		2		0	,	0:		0		8		0	10	
Microgranuloma		0		2		0		3		0		6		0	5	
trace		ō		2		O		3		0		6		ó	5	
Within Normal Limits		0		0		0		7		0		0		0	0	
Lung	(. (10)	(0)	(•	(0)	('	10)	(_	(10)	
Alveolar histiocytosis	`	0	•	0	`	0	`	0	•	0	١.	0	•	0	2	
trace		.0		o		0		0		0		0		0		
Congestion		٥		Ö		0		O.		0		1		0	2 0	
mild		0		0		o		0		0		1		0	_	•
Hemorrhage		0		0		o		3		0		0		0	0	
trace		0		ō		0		3		0		0		0	1	
mild		ō		0		.0	•	0		0		0		-	0	
Inflammation, interstitial		0		1		0		0		0		1		0	1 1	
trace		0		1		0		0		Ü		1		-		
Within Normal Limits		0		9		0		7		0		8		0	1	
Lymph Node	(0)	((0)	,	10)	,	_		6 (0)	,	0	6	
Within Normal Limits	`	0	`	10	•	0	`	10	(0) 0			((10)	
Nerve, Peripheral	(0)	((0)	,	10)		_	-	0	,	0	10	
Within Normal Limits	`	0	`	10	•	0	•	10)				0)	((10)	
Pancreas	(0)	,	10)	(0)		10)	,	0		0		0	10	
. Hemorrhage	`	0	•	0	•	0	,		(0)		0)	((10)	
trace		0		0				0		0		1		0	0	
Inflammation, subacute		0	-	_		0		0		0		1		0	0	
trace				0		0		0		0		1		0	3	
moderate		0		0		0		0		0		1		0	2	
Within Normal Limits		0		0		0		0		0		0		0	1	
archin normat Limits		0		10		0		10		0		9		0	7	

Titles:

Group 1 0 PPM

Group 2 0 PPM/RESTRICTED DIET

Group 3 500 PPM

Group 4 1000 PPM

All modifiers are printed.

() = Total Examined

DOS= Intercurrent Death(s)

Species: Rat

This report was printed on 06-09-1993.

Dos SAC Dos	Tissue/		Grou	p 1	(Group	2		Group	3		Grou	p 4
	Diagnosis/ Modifier(s)	-						-			-	 -	
Parathyroid (0) (7) (0) (8) (0) (8) (0) (9) Parathyroid Within Normal Limits 0 7 (0) (10) (0) (10) (0) (10) (0) (110471761(37		บบร	SAC	ı	DOS	SAC		DOS	SAC		DOS	SAC
Within Normal Limits	<u>Total Animals</u>		0	10		0	10		0	10		0	10
Within Normal Limits		(0)	(7)	(0)	(8)	(0)	(8)	(O)	(9)
Fituitary			0	. 7		0	8				•		
Embryoric remnant Within Normal Limits 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		(0)	(10)	(0)	(10)	Ċ	0)	_	(•
Mithin Normal Limits			. 0	0		0	1				•		
Prostate			0	10		0	9		0	10			_
Inflammation, subacute		(0)	(10)	(כם	(10)	(ח)		1	_	
Trace mild mild moderate 0	Inflammation, subacute		0	3		-		•			`		
mild 0 1 0 3 0 1 0 0 Within Normal Limits 0 0 0 0 0 0 1 0 0 Salivary Gland (0) (10) (0) (10) (0) (10) (0) (0) (9) (0) (0) (10) 0	trace		Ð	2		Đ			_	_		_	
moderate 0 0 0 0 0 1 0 0 Within Normal Limits 0 7 0 6 0 7 0 8 Salivary Gland (0) (10) (0) (10) (0) (10) (0) (mild		0	-			-		_	-		-	
Within Normal Limits	moderate		o			-	_		_	_		_	
Salivary Gland (0) (10) (0) (10) (0) (9) (0) (10)	Within Normal Limits		_	_		_	_		_	-		_	_
Within Normal Limits 0 10 0 10 0 9 0 10 Seminal Vesicle (0) (10) (10) (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) Within Normal Limits 0 10 0 <th< td=""><td>Salivary Gland</td><td></td><td>0)</td><td></td><td>. (</td><td>-</td><td>-</td><td>,</td><td>-</td><td>-</td><td>,</td><td>_</td><td></td></th<>	Salivary Gland		0)		. (-	-	,	-	-	,	_	
Seminal Vesicle	Within Normal Limits	•	-	-	•			. `	- •	,	•		
Within Normal Limits 0 10	Seminal Vesicle	. (-		,	_		,	. –	-	,	-	
Skeletal Muscle (0) (10) (0) (10) (0) (10) (0) (Within Normal Limits	`			`			•			(
Within Normal Limits 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0 10 Skin (0) (10) (10) (0) (10) (0) (9) (0) (10) Within Normal Limits 0 10 0 10 0 10 0 9 0 10 0 10 0 10 Spinal Cord (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) 0 10 0 10 0 10 0 10 Within Normal Limits 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0 10 Spleen (0) (10) (10) (0) (10) (0) (10) (0) (10) (0) (10) 0 10 0 10 0 10 0 10 0 10 0 10 Within Normal Limits 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0 10 Stomach, Glandular 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0 10 Within Normal Limits 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0 10 Stomach, Nonglandular 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 10 Within Normal Limits 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Skeletal Muscle	(_		,	_		,				-	
Skin (0) (10) (0) (10) (0) (10) (0) (9) (0) (10) Within Normal Limits 0 10 0 10 0 10 0 9 0 10 Spinal Cord (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) Within Normal Limits 0 10 0 10 0 10 0 10 0 10 Spleen (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) Within Normal Limits 0 10 0 10 0 10 0 10 0 10 Stomach, Glandular (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) Within Normal Limits 0 10 0 10 0 10 0 10 0 10 Stomach, Nonglandular (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) Within Normal Limits 0 10 0 10 0 10 0 10 0 10 Within Normal Limits 0 10 0 10 0 10 0 10 0 10 Dilatation, tubular 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 mild 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 Hypospermatogenesis 0 0 0 0 0 0 0 0 0 0 0 0 0 0 mild 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		`			•	- •		•		-	(
Within Normal Limits 0 10 0 10 0 10 0 9 0 10 Spinal Cord (0) (10) (0) (10) (0) (10) (0) (Skin	,	_		,	-		,	_			_	
Spinal Cord	Within Normal Limits	`			•			((
Within Normal Limits		,	-		,	-			_	-			
Spleen (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) Within Normal Limits 0 10 0 10 0 10 0 10 0 10 Stomach, Glandular (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) Within Normal Limits 0 10 0 10 0 10 0 10 0 10 Stomach, Nonglandular (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) Within Normal Limits 0 10 0 10 0 10 0 10 0 10 Testis (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) Dilatation, tubular 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		. `				-,	-	((
Within Normal Limits 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0 10 0 10	· · · · · · · · · · · · · · · · · · ·	,	-	_	,	_			_			_	
Stomach, Glandular		•			(((
Within Normal Limits 0 10 0 10 0 10 0 10 0 10 Stomach, Nonglandular (0)(10)(0)(10)(0)(10)(0)(10)(0)(10) Within Normal Limits 0 10 0 10 0 10 0 10 0 10 Testis (0)(10)(0)(10)(0)(10)(0)(10)(0)(10) Dilatation, tubular 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		,	-		,	-	. –		_				
Stomach, Nonglandular		((•	(((10)
Within Normal Limits 0 10 0 10 0 10 0 10 0 10 Testis (0)(10)(0)(10)(0)(10)(0)(10)(0)(10) Dilatation, tubular 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		,	_			_			_	•-		_	10
Testis (0) (10) (0) (10) (0) (10) (0) (10) (0) (10) Dilatation, tubular 0 0 0 0 0 0 0 0 0 0 2 mild 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		(•	(•	(0) ((0)	(10)
Dilatation, tubular mild			_						-			0	10
mild 0 0 0 0 0 0 0 2 Hypospermatogenesis 0 0 0 0 0 0 0 0 0 0 5 mild 0 0 0 0 0 0 0 0 0 1 0 1 0 <td></td> <td>(</td> <td></td> <td></td> <td>•</td> <td></td> <td> •</td> <td>(</td> <td> •</td> <td>10)</td> <td>(</td> <td>0)</td> <td>(10)</td>		(•		•	(•	10)	(0)	(10)
Hypospermatogenesis 0 0 0 0 0 0 0 0 0 5 mild 0 </td <td></td> <td></td> <td>_</td> <td>_</td> <td></td> <td>_</td> <td></td> <td></td> <td>. –</td> <td>0</td> <td></td> <td>0</td> <td>2</td>			_	_		_			. –	0		0	2
mild 0 0 0 0 0 0 0 0 1 moderate 0 2 0 <td< td=""><td></td><td>•</td><td></td><td></td><td></td><td></td><td>-</td><td></td><td>0</td><td>0</td><td></td><td>0.</td><td>2 ·</td></td<>		•					-		0	0		0.	2 ·
moderate 0 0 0 0 0 0 0 0 0 0 0 0 0 2 severe 0 0 0 0 0 0 0 0 0 0 2 Within Normal Limits 0 10 0 10 0 10 0 10 0 4 Thymus (0)(10)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0	• • •			0		0	0		0	0		0	5
severe 0 0 0 0 0 0 0 2 Within Normal Limits 0 10 0 10 0 10 0 10 0 4 Thymus (0)(10)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0			_	_		0	0		0	0		0	1
Within Normal Limits 0 10 0 10 0 10 0 4 Thymus (0)(10)(0)(10)(0)(10)(0)(10)(0)(10) (0)(10)(0)(10)(0)(10)(0)(10) (0)(10)(0)(10)(0)(10)(0)(10) (0)(10)(0)(10)(0)(10)(0)(10)(0)(10) Hemorrhage 0 4 0 7 0 6 0 4 trace 0 4 0 5 0 6 0 4	·		_	O		0	0		0	0		0	2
Thymus (0)(10)(0)(10)(0)(10)(0)(10) Hemorrhage 0 4 0 7 0 6 0 4 trace 0 4 0 5 0 6 0 4	· -		0	0	-	0	0		0	0		0	2
Hemorrhage 0 4 0 7 0 6 0 4 trace 0 4 0 5 0 6 0 4	··· · · · · · · · · · ·			10	-	0	10		0	10		0	4
Hemorrhage 0 4 0 7 0 6 0 4 trace 0 4 0 5 0 6 0 4	•	(0) (10)	(0) (10)	(0) (10)	(0) (10)
trace 0 4 0 5 0 6 0 4	<u> </u>		0	4	1	0	7		0	6		0	•
mild			0	4	(0	5		0			-	-
	mild		0	0	(0	2		0	0		-	•

Titles:

Group 1 0 PPM

Group 2 0 PPM/RESTRICTED DIET

Group 3 500 PPM

Group 4 1000 PPM

All modifiers are printed.

() = Total Examined

DOS= Intercurrent Death(s)

SAC= Scheduled Euthanasia

Microscopic Incidence Page: 10

Study Number: 55-YJ81-91

Species: Rat

This report was printed on 06-09-1993.

<u>Tissue</u> / Diagnosis/	Grou	ıp 1	Group	2	Group	3	Group 4		
Modifier(s)	DOS	SAC	DOS	SAC	DOS	SAC	DOS	SAC	
Total Animals	0	10	0	10	0	10	0	10	
Thymus (continued)									
Within Normal Limits	0	6	. 0	3	Ð	4	'n		
Thyroid	(0)	-	(0). ((10)	(0)	(10)	(0)	6 (10)	
Embryonic remnant	0	1	0	2	0	2	0	(10)	
Within Normal Limits	o ·	9	0	8	. 0	8	0	9	
Tonque	(0)	(10)	(1) ((10)	(0)	(10)	(0)		
Within Normal Limits	0	10	0,	10	0	10	0)	(10)	
<u>Trachea</u>	(0)		(0)((10)	(0)	(10)	(0)	10	
Within Normal Limits	0	10	0	10	0	10)	,	(10)	
Urinary Bladder	(0)	(10)	(0) (10)	-	•-	0	10	
Within Normal Limits	0	10	0	10)	(0) 0	(10) 10	(0) ((9) 9	

Titles:

Group 1 0 PPM

Group 2 0 PPM/RESTRICTED DIET

Group 3 500 PPM

Group 4 1000 PPM

All modifiers are printed.

() = Total Examined

DOS= Intercurrent Death(s)

SAC= Scheduled Euthanasia

Microscopic Incidence Page: 11

Study Number: 55-YJ81-91

Study Number: 55-YJ81-91

Species: Rat

This report was printed on 06-09-1993.

Tissue/	Group 5
Diagnosis/	
Modifier(s)	DOS SAC
Total Animals	0 10
Adrenal Cortex	(0) (10)
Within Normal Limits	0 10
Adrenal Medulla	(0) (10)
Within Normal Limits	0 10
<u>Aorta</u>	(0) (7)
Within Normal Limits	. 0 7
Bone Marrow, Femur	(0) (10)
Within Normal Limits	0 10
Brain, Cerebellum	(0)(9)
Within Normal Limits	0 9
<u>Brain, Cerebrum</u>	(0)(9)
Within Normal Limits	0 9
Brain, Medulla Oblongata	(0)(9)
Within Normal Limits	0 9
Brain, Midbrain	(0)(9)
Within Normal Limits	0 9
Brain, Pons	(0)(9)
Within Normal Limits	0 9
Duodenum	(0) (10)
Within Normal Limits	0 10
Epididymis	(0) (10)
Granuloma, spermatic	0 1
moderate	0 1
Hypospermia	0 10
moderate	0 5
severe	0 5
Inflammation, subacute	0 . 1
trace	0 1
Esophagus	(0) (10)
Within Normal Limits	0 10
<u>Heart</u>	(0) (10)
Cardiomyopathy	0 8
trace	0 2
mild	0 6
Within Normal Limits	0 2
Intestine	(0)(10)
Within Normal Limits	0 10
	- 10 ·

Titles:

Group 5 2000 PPM

() = Total Examined

DOS= Intercurrent Death(s)

SAC= Scheduled Euthanasia

All modifiers are printed.

Study Number: 55-YJ81-91

Species: Rat

This report was printed on 06-09-1993.

Tissue/	Group 5
Diagnosis/	
Modifier(s)	DOS SAC
<u>Total Animals</u>	0 10
<u>Kidney</u>	(0) (10)
Hemorrhage	0 1
severe	0 1
Hydronephrosis	0 2
moderate	0 2
Inflammation, interstitial	0 1
trace	0 1
Intratubular proteinic material	0 4
trace	0 4
Necrosis	0 1
severe	0 1
Regeneration, tubular	0 4
trace	0 4
Within Normal Limits	0 3
Liver	(0) (10)
Cytoplasmic vacuolization	0. 10
moderate	0 8
severe	0 2
Inflammation, subacute	.0 6
trace	0 1
portal, trace	0 4
portal, mild	0 1
Microgranuloma	. 0 5
trace	0 5
Necrosis, coagulative	0 1
focal, mild	0 1
Lung	(0) (10)
Alveolar histiocytosis	0 1
trace	0 1
Within Normal Limits	0 9
Lymph Node	(0) (10)
Within Normal Limits	0 10
Nerve, Peripheral	(0) (10)
Within Normal Limits	0 10
Pancreas	(0) (10)
Inflammation, subacute	0 1
mild	0 1
Within Normal Limits	0 9
	· · ·

Titles:

Group 5 2000 PPM

() = Total Examined

DOS= Intercurrent Death(s)

SAC= Scheduled Euthanasia

All modifiers are printed.

Study Number: 55-YJ81-91

Species: Rat

This report was printed on 06-09-1993.

<u>Tissue</u> / Diagnosis/	Gr	oup	5
Modifier(s)	DC	S	SAC
Total Animals		0	10
<u>Parathyroid</u>	(0) 4	(8)
Within Normal Limits		0	8
<u>Pituitary</u>	(0)	(9)
Within Normal Limits		0	- 9
Prostate	(0) ((-10)
Inflammation, chronic active		0	1
severe		0	1
Inflammation, subacute		0	1
mild		0	1
Within Normal Limits		0	8
Salivary Gland	-		(10)
Within Normal Limits		0	10
Seminal Vesicle			(10)
Within Normal Limits		0	10
Skeletal Muscle	-		10)
Within Normal Limits		0	10
Skin			10)
Within Normal Limits		0	10
Spinal Cord			10)
Within Normal Limits) 	10
<u>Spleen</u>	_		10)
Inflammation, subacute capsular, moderate)	1
Within Normal Limits)	1
Stomach, Glandular)	9
Within Normal Limits			10)
Stomach, Nonglandular	-)	10
Within Normal Limits	-		10)
Testis) ```	10
Granuloma, spermatic	•		10)
mild))	1
Hypospermatogenesis)	-
moderate	(10 4
severe	(
Thymus			6 10)
Hemorrhage	((3
trace	(3
Within Normal Limits	(ა 7
HOLINGE LIMITS		,	- (

Titles:

Group 5 2000 PPM

() = Total Examined

DOS= Intercurrent Death(s)

SAC= Scheduled Euthanasia

All modifiers are printed.

Study Number: 55-YJ81-91

Species: Rat

This report was printed on 06-09-1993.

<u>Tissue</u> / Diagnosis/		irou) 	5
Modifier(s)	D	os	5	SAC
Total Animals		0		10
Thyroid	(0)	(10)
Embryonic remnant		0		2
Within Normal Limits		0		8
Tongue	(0)	(10)
Within Normal Limits		0		10
Trachea	(0)	(10)
Within Normal Limits		0		10
<u>Urinary Bladder</u>	(0)	(10)
Within Normal Limits		0		10

Titles:

Group 5 2000 PPM

() = Total Examined

DOS= Intercurrent Death(s)

SAC= Scheduled Euthanasia

All modifiers are printed.

Study Number: 55-YJ81-91

Species: Rat

This report was printed on 06-09-1993.

Tissue/		Grou		1		Grou	ıp 2		Gro		roup 3		Group	4	
Diagnosis/	-				,-					<i>-</i> -		-		-	
Modifier(s)	I	DOS	5	SAC		DOS		SAC		os	SAC		DOS	SAC	
Total Animals	•	0		10		0		10		0	10		0	10	
Adrenal Cortex	Ç	0)	(10)	(0)	(10)	(0)	(10)	(0)	(10)	
Within Normal Limits		0		10		0		10		0	10		0	10	
Adrenal Medulla	(0)	(10)	(0)	(10)	(0)	(10)	(0)	(10)	
Within Normal Limits		0		10		0		10		0	10		0	10	
<u>Aorta</u>	(0)	(9)	(0)	(8)	(0)	(9)	(0) ((9)	
Within Normal Limits		0		9		0		8		0	9		0	9	
Bone Marrow, Femur	. (0)	(10)	(0)	(10)	(0)	(10)	(0) ((10)	
Within Normal Limits		0		10		0		10		0	10		0	10	
Brain, Cerebellum	(0)	(10)	. (0)	(10)	(0)	(10)	(0) ((10)	
Within Normal Limits		0		10		0		10		0	10		0	10	
Brain, Cerebrum	(0)	(10)	(0)	(10)	(0)	(10)	(0) (10)	
Within Normal Limits		0		10		0		10		0	10		0	10	
Brain, Medulla Oblongata	(0)	(10)	(0)	(10)	(0)	(10)	(0) (10)	
Within Normal Limits		0		10		0		10		0	10		0	10	
Brain, Midbrain	(0)	(10)	(0)	(10)	(0)	(10)	(0) (10)	
Within Normal Limits	٠	0		10		0		10		0	10		0	10	
Brain, Pons	(0)	(10)	(0)	(10)	(0)	(10)	(0) (10)	
Within Normal Limits		0		10		0		10		0	10		0	10	
Duodenum	(0)	(10)	(0)	(10)	(0)	(10)	. (0) (10)	
Within Normal Limits		0		10		0		10		0	-10		0	10	
Esophagus	(0)	('	10)	(0)	(10)	(0)	(10)	(0) (10)	
Within Normal Limits		0	•	10		0		10		0	10		0	10	
<u>Εγe</u>	(0)	(0)	(0)	(0)	(0)	(1)	(0) (1)	
Within Normal Limits		0		0		0		0		0	. 1		0	1	
<u>Heart</u>	(0)	('	10)	(0)	(10)	(0)	(10)	(0) (10)	
Within Normal Limits		0	,	10		0		10		0	10		0	10	
<u>Intestine</u>	(0)	('	10)	(0)	(10)	(0)	(10)	(0) (10)	
Within Normal Limits		0	1	10		0		10		0	10		0	10	
<u>Kidney</u>	(0)	(1	10)	(0)	(10)	(0)	(10)	(0) (10)	
Intratubular proteinic material		0		0		0		0		0	0		0	1	
mild		0		0		0		0		0	0		0	1	
Regeneration, tubular		0		1		0		0		0	0		0	1	
trace		0		1		0		0		0 -	0		0	Ó	
mild		0		0		0		0		0	0		0	1	
Within Normal Limits		0		9.		0		10		0	10		o	9	
Liver	(0)	(1	0)	(0)		10)	(_	(10)	(0) (10)	
Cytoplasmic vacuolization		0	1	0		0	-	0	٠	0	4	•	0	8	
mild		0		8		0		0		0	2		0	1	
moderate	•	ō		2		0		Ö		0	2	,	0	7	
								_		_			-	•	

Titles:

Group 1 0 PPM

Group 2 0 PPM/RESTRICTED DIET

Group 3 500 PPM

Group 4 1000 PPM

All modifiers are printed.

() = Total Examined

DOS= Intercurrent Death(s)

Study Number: 55-YJ81-91

Species: Rat

This report was printed on 06-09-1993.

<u>Tissue</u> / Diagnosis/		Group 1			(Group 2		Group		р 3	Group		4
Modifier(s)	<u>-</u> .	DOS		SAC		os	SAC		os	SAC		os	SAC
Total Animals		0		10		0	10		0	10		0	10
<u>Liver</u> (continued)													
Inflammation, subacute		0		0		0	0		0	0		0	3
portal, trace		Ó		0		0	0		0	0		0	3
Microgranuloma		0		. 3		0	7		0	8		Ö	8
trace		0		3		0	7		0	8		0	8
Within Normal Limits		0		0		0	3		0	2		0	1
Lung	(0)	(10)	(0)	(10)	(0)	(10)	(0) ((10)
Alveolar histiocytosis		0		0		0	1		0	0	-	0	0
trace		0	·	0		0	1		0	. 0		0	0
Within Normal Limits	•	0		10		0	9		0	10		ō	10
Lymph Node	(0)	(10)	(0)	(10)	(0)	(10)	(0) (
Within Normal Limits		0		10		0	10		0	10	·	0	10
Nerve, Peripheral	(0)	(10)	(0>	(10)	(0)	(10)	(0) ((10)
Within Normal Limits		0		10		0	10		0	10		0	10
Ovary	(0)	(10)	(0)	(10)	(0)	(10)	(_	(10)
Within Normal Limits		0		10		0	10		0	10	•	0	10
Pancreas	. (0)	(10)	(0)	(10)	(0)	(10)	(0) (
Within Normal Limits		0		10		0	10	•	0	10	•	0	10
<u>Parathyroid</u>	. (.0)	(8)	(0)	(6)	(0)	(6)	(0) (
Within Normal Limits		0		8		0	6	·	0	6	٠	0	8.
Pituitary	.(0)	(10)	(0)	(10)	(0)	(10)	(0) ((10)
Within Normal Limits		0		10		0	10		0	10	•	0	10
Salivary Gland	(0)	(10)	(0) =	(10)	(0)	(10)	(0) (
Within Normal Limits		0		10	-	0	10	-	0	10	·	0	10
Skeletai Muscle	(0)	(10)	(0)	(10)	(0)	(10)	٠.	0) (
Within Normal Limits	•*	0		10		0	10	•	0	10	•	0	10
Skin	(0)	(10)	(0) ((10)	(Ó)	(9)	(0) (10)
Within Normal Limits		0		10		0	10		0	9	•	0	10
Spinal Cord	. (0)	(10)	(0) ((10)	(Đ)	(10)	(10)
Within Normal Limits		0		10		0	10	•	0	10	•	0	10
Spleen	(0)	(10)	(0) ((10)	(0)	(10)	(0) (
Within Normal Limits		0		10		0	10		0	10	•	0	10
Stomach, Glandular	(0)	(10)	(_	(10)	(_	(10)	(_	10)
Mineralization	•	0	Ī	0	-	0	1	•	0	0	`	0	0
mild		0		ō		0	1		Ô	0		0	0
Within Normal Limits		0		10		Ö	9		Ö	10		0	10
Stomach, Nonglandular	(0)	(10)	((10)			(10)	(0) (
Within Normal Limits	`	0	٠	10	•	0	10	`	0	10	`	0	10
•									-			-	

Titles:

Group 1 0 PPM

Group 2 0 PPM/RESTRICTED DIET

Group 3 500 PPM

Group 4 1000 PPM

All modifiers are printed.

() = Total Examined

DOS= Intercurrent Death(s)

Study Number: 55-YJ81-91

Species: Rat This report was printed on 06-09-1993.

<u>Tissue</u> /	Group 1		1	Group 2			Group 3			Group 4				
Diagnosis/		_		· 										
Modifier(s)		ı	DOS	SA	С	ı	oos	SAC	ı	oos	SAC	ı	00\$	SAC
<u>Total Animals</u>			0	1	0		0	10		. 0	10		0	10
Thymus		(0)	(1	0)	(0)	(10)	(0)	(10)	(0)	(10)
Hemorrhag e			0		3		0	8	·	0	6	`	0	3
trace			0		3		0	8		0	6		0	3
Within Normal Limits			0	•	7		0	2		ō	4		Õ	7
<u>Thyroid</u>		(0)	(10))	(0)	(10)	(0)	(10)	(0)	(10)
Embryonic remnant			0	()		0	0	•	0	1	•	0	2
Within Normal Limits			0	10)		0	10		o	9		ō	8
Tongue		. (0)	(10))	(0)	(10)	(0)	(10)	(0)	(10)
Within Normal Limits			0	10)		0	10	•	0	10	`	0	10
<u>Trachea</u>	-	Ċ	0)	(10)	(0) ((10)	(0)	(10)	(0)	(10)
Within Normal Limits			0	10		•	0	10	`	0	10	`	0.	10
<u>Urinary Bladder</u>		(0)	(10))	(0) ((10)	((10)	((10)
Within Normal Limits	4		0	10)	-	0	10	-	0	10	`	0	10
<u>Uterus</u>		(0)	(10)	(0) ((10)		_	(10)	(_	(10)
Hydrometra			0	C	}		0	3	·	0	2	`	0	2
trace			0	C)		ō.	0		0	0		0	. 1
mild			0	.0)		ō	3		Ö	2		0	0
moderate			0	O			0	0		0	0		0	1
Within Normal Limits			0	10			0	7 .		0	8		0	8
<u>Vagina</u>		(0)	(10		(0) (-	(0)	(10)	(0)	(10)
Within Normal Limits			0	10	•	•	0	9	`	o o	10	`	0	10

Titles:

Group 1 0 PPM

Group 2 0 PPM/RESTRICTED DIET

Group 3 500 PPM

Group 4 1000 PPM

All modifiers are printed.

() = Total Examined

DOS= Intercurrent Death(s)

Incidence of Histopathologic Findings for Females (continued) US ARMY ENVIRONMENTAL HYGIENE AGENCY 90-DAY FEEDING STUDY OF 4-AMINO, 2-NITROTOLUENE IN RATS

Study Number: 55-YJ81-91

Species: Rat

This report was printed on 06-09-1993.

<u>Tissue</u> / Diagnosis/	Group 5
Modifier(s)	DOS SAC
Total Animals	0 10
Adrenal Cortex	(0) (10)
Within Normal Limits	0 10
Adrenal Medulla	(0) (10)
Within Normal Limits	0 10
Aorta	(0) (9)
Within Normal Limits	0 9
Bone Marrow, Femur	(0) (10)
Within Normal Limits	0 10
Brain, Cerebellum	(0) (10)
Within Normal Limits	0 10
Brain, Cerebrum	(0)(10)
Within Normal Limits	0 10
Brain, Medulla Oblongata	(0) (10)
Within Normal Limits	0 10
Brain, Midbrain	(0) (10)
Within Normal Limits	0 10
Brain, Pons	(0) (10)
Within Normal Limits	0 10
Duodenum	(0)(10)
Within Normal Limits	0 10
Esophagus	(0)(10)
Within Normal Limits	0 10
Heart	(0)(10)
Within Normal Limits	0 10
Intestine	(0) (10)
Within Normal Limits	0 10
Kidney	(0)(10)
Intratubular proteinic material	0 1
mild	0 1
Regeneration, tubular	= •
trace	
mild	
Within Normal Limits	0 1
Liver	0 8
Cytoplasmic vacuolization	(0) (10)
mild	0 10
moderate	0 2
severe	0 6
≎c∕ei.e	0 2

Titles:

Group 5 2000 PPM

() = Total Examined

DOS= Intercurrent Death(s)

SAC= Scheduled Euthanasia

All modifiers are printed.

Microscopic Incidence Page: 19

Incidence of Histopathologic Findings for Females (continued) US ARMY ENVIRONMENTAL HYGIENE AGENCY 90-DAY FEEDING STUDY OF 4-AMINO, 2-NITROTOLUENE IN RATS

Study Number: 55-YJ81-91

Species: Rat

This report was printed on 06-09-1993.

<u>Tissue</u> / Diagnosis/	•	Grou	5 .
Modifier(s)		oos	SAC
Total Animals		0	10
<u>Liver</u> (continued)			
Inflammation, subacute		0	2
portal, trace		0	2
Microgranuloma		0	9
trace		0	9
Lung	(0)	(10)
Alveolar histiocytosis		0	2
trace		0	2
Hemorrhage		0	1
trace		O	1
Within Normal Limits		0	7
Lymph Node	(0)	(10)
Sequestered blood		0	1
mild		0	1
Within Normal Limits		0	9
Nerve, Peripheral	(0)	(10)
Within Normal Limits		0	10
<u>Ovary</u>	(0)	(10)
Within Normal Limits		0	10
<u>Pancreas</u>	(0)	(10)
Within Normal Limits		0	10
<u>Parathyroid</u>	(0)	(8)
Within Normal Limits		0	8
<u>Pituitary</u>	(0)	(9)
Within Normal Limits		0	9
Salivary Gland	(0)	(10)
Within Normal Limits		0	10
<u>Skeletal Muscle</u>	. (0)	(10)
Within Normal Limits		0	10
<u>Skin</u>	(0)	(9)
Within Normal Limits		0	9
Spinal Cord	(0)	(10)
Within Normal Limits		0	10
<u>Spleen</u>	(0)	(10)
Within Normal Limits		0	10
Stomach, Glandular	(0)	(10)
Mineralization		0	1
moderate		0	1

Titles:

Group 5 2000 PPM

() = Total Examined

DOS= Intercurrent Death(s)

SAC= Scheduled Euthanasia

All modifiers are printed.

Microscopic Incidence Page: 20

Incidence of Histopathologic Findings for Females (continued) US ARMY ENVIRONMENTAL HYGIENE AGENCY 90-DAY FEEDING STUDY OF 4-AMINO, 2-NITROTOLUENE IN RATS

Study Number: 55-YJ81-91

Species: Rat

This report was printed on 06-09-1993.

<u>Tissue</u> / Diagnosis/	(Grou	p	5
Modifier(s)		oos		SAC
		,,,,		JAC
<u>Total Animals</u>		0		10
Stomach, Glandular (continued)				
Within Normal Limits		0		9
Stomach, Nonglandular	(0)	(10)
Within Normal Limits		0		10
Thymus	(്ഠാ	(10)
Hemorrhage		0		5
trace		0		5
Within Normal Limits		0		5
Thyroid	(0)	(10)
Embryonic remnant		0		2
Within Normal Limits		0		8
Tongue	(0)	(10)
Within Normal Limits		0		10
Trachea	(0)	(10)
Within Normal Limits		0		10
<u>Urinary Bladder</u>	(0)	(7)
Within Normal Limits		0		7
<u>Uterus</u>	(0)	(9)
Hydrometra		0		2
trace		0		1
mild		0		1
Within Normal Limits		0		7
Vagina	Ċ	0)	(9)
Within Normal Limits		0	•	9

Titles:

Group 5 2000 PPM

() = Total Examined

DOS= Intercurrent Death(s)

SAC= Scheduled Euthanasia

All modifiers are printed.

Microscopic Incidence Page: 21

Project: 55-YJ81-91 Species: Rat This report was printed on 06-09-1993.

The Legend to the Outline Report

X = Within Normal Limits

P = Present

C = Comment made

1 = Metastatic

2 = trace

3 = mild

4 = moderate

5 = severe

6 = present NG

7 = focal trace

8 = focal mild

9 = massive

10 =

() = Focal

<> = Multifocal

[] = Diffuse

SE = Scheduled Euthanasia

ME = Moribund Euthanasia

FD = Found Dead

OT = Other

Project: 55-YJ81-91 Species: Rat Sex: Male Group: (1) O PPM

•	·	7		7					7		
		2	2	2	2	2	2	2	2	2	4
•	Animal Number:	٠							0	٠	,
	ATTIMAL HAMBEL.								7		
									2		
									0		
	Fate:										
Organ/	Death Day:	9	9	9	9	9	9	9	9	9	ç
Diagnosis	•								0		
Adrenal Cortex							. <u>-</u>	·			
Within Normal Limits		Х	Х	Х	X	Х	Χ	Х	X	Х)
Adrenal Medulla											
One of pair present			P	P	P		Ρ	P	P		
Within Normal Limits		Χ	X	X	X	X	X	X	X	Х	X
Aorta											- -
Tissue Not Present			· C				C	C	C	С	
Within Normal Limits		X		X	Х	X					Х
Bone Marrow, Femur											
Within Normal Limits		Х	X	X	X	X	X	X	X	X	χ
Brain, Cerebellum											- -
Within Normal Limits		X	X	X	X	Χ	X	X	X	χ	Х
Brain, Cerebrum								-			
Within Normal Limits		X	X	Х	Х	χ	Χ	X	X	X	Х
Brain, Medulla Oblongata											
Within Normal Limits	•	X	X	X	Χ	X	X	X	X	χ	X
Brain, Midbrain					-				-,		
Within Normal Limits	•	X	X	X	X	Х	X	X	X	X	X
Brain, Pons				-							
Within Normal Limits	,	X	Χ	X	X	X	X	X	X	X	X
Duodenum	1										
Within Normal Limits									χ		
Epididymis									 -		
Within Normal Limits		X	X	X	X	Х	X	X	X	X	X
Esophagus						-					
Tissue Not Present		С									
Within Normal Limits			X	X	X	X	X	X	X	X	X
Heart											
Within Normal Limits		Х	X	X	Х	Х	X	Х	X	X	X
Intestine											
Tissue Not Present		C									
Within Normal Limits			X	Χ	X	X	X	X	X	X	X

Project: 55-YJ81-91 Species: Rat Sex: Male Group: (1) 0 PPM

			9		9	9	9	9	9	9	9	9
			2	2	2	2	2	2	2	2	2	2
			•	•		•	•	•	•	•	•	•
	Animal	Number:	0	0	0	0	0				_	0
•			7	7	7	7	7	7	-			7
			1	1	1	1	1		-	_	2	
•		rata.	3	4	5	6	7		9	_	1	2
		Fate:	3 E	.5E	25	2E	3E	SE	SE.	SE	SE	SE
Organ/	Deat	h Day:	9	9	9	9	9	9	9	9	9	9
Diagnosis		bay.	ó		ó					0	-	-
			_	Ū		Ü	Ü	Ü	٠	U	٠	٠
Kidney											-	
Inflammation, interstitia	l .						2					
Regeneration, tubular												2
Within Normal Limits			Х	X	X	Х		Х	Х	Х	Х	
Liver												
Cytoplasmic vacuolization			3	3	3	4	3	3	3	3	4	3
Microgranuloma								2			2	
Lung												
Inflammation, interstitia	ι											2
Within Normal Limits			X	X	X	X	X	Χ	Χ	X	X	
Lymph Node												
Within Normal Limits			X	X	X	X	X	Χ	X	X	X	X
Nerve, Peripheral											-	
Within Normal Limits				X								X
Pancreas												
Within Normal Limits Parathyroid				X								
1 di didiyi Old												 '
Not in plane of section			С	_		_		С	С			
One of pair present Within Normal Limits						P	-				P	-
Pituitary				X	Х	Х	Х			Х	Х	Х
Within Normal Limits			· ·	· ·	· · · ·		· · · ·	· · ·	·	·		
Prostate				X 								
Inflammation, subacute			2			-,				2		_
Within Normal Limits			_	,	Y	v	v	v	v	ے	v	v
Salivary Gland						·						
Within Normal Limits			x	χ	¥	¥	¥	Y.	Y	Y	Y	Y
Seminal Vesicle				· -							·	
Within Normal Limits			X	X	x	x	x	x	x	x	¥	x
Skeletal Muscle											 	-
Within Normal Limits			х	х	х	х	х	χ.	х	х	х	х
Skin									·			-
Within Normal Limits			X	Х	Х	Х	х	Х	х	Х	х	х

Project: 55-YJ81-91 Species: Rat Sex: Male Group: (1) 0 PPM

•							_				
•		9	9	9	9	9	9	9	9	9	9
		2	2	2	2	2	2	2	2	2	2
	•	-			-		-			-	
	Animal Number:	_		-	0	_		0	0	0	0
	-	7	7		7	7	7	7	7	7	7
		1	1		1	1	1	1	2	2	2
•		3	4	-	6	•	8	_	_		2
	Fate:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Organ/	Death Day:	9	9	9	9	9	9	9	9	9	9
Diagnosis		0	0	0					-	0	-
Spinal Cord				. 							
Within Normal Limits		¥	Y	Y	¥	Y	¥	Y	¥	х	v
Spleen										·	
Within Normal Limits		x	x	x	¥	Y	X	Y	¥	х	Y
Stomach, Glandular											
Within Normal Limits	4	X	x	x	x	¥	Y	¥	Y	Х	·
Stomach, Nonglandular											
Within Normal Limits		Х	х	х	Х	х	х	х	x	Х	x
Testis											
Within Normal Limits		Х	х	Х	х	Х	х	х	х	Х	х
Thymus											
Hemorrhage		2						2		2	2
Within Normal Limits			Х	χ	Х	Х	Х		Х		
Thyroid			- ¹	- 	-						
Embryonic remnant											Р
One of pair present		Р					P				-
Within Normal Limits		X	Х	Х	Х	Х	X	х	Х	Х	
Tongue											
Within Normal Limits		X	X	Х	Х	Х	Х	х	À	Х	х
Trachea				-		-		- -, -			
Within Normal Limits		X	Х	Х	X	Х	χ	х	х	Х	Х
Urinary Bladder											
Within Normal Limits		¥	Y	Y	Y	Y	v	¥	v	v	v

Project: 55-YJ81-91 Species: Rat Sex: Male Group: (2) O PPM/RESTRICTED DIET

		9	9	9	9	9	9	9	9	9	9
		2	_	2	-	-	-	_	_	2	2
		-	-	_	_	_	_	_	_	_	_
	Animal Number:	O	Ó	0	. 0	O	o	0	0	0	0
		7	7	7	7	7	7		8		8
		9	9	9	9	9	9				0
		3	4	5	6	7	8	9	0	1	2
	Fate:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Organ/	Death Day:	9	9	9	9	9	9		9	9	9
Diagnosis	veatii vay.	0				0			-	-	-
· ·	•	U	U	U		U	U	U	U	U	U
Adrenal Cortex											
Within Normal Limits		X	X	X	X	X	Х	X	X	Х	X
Adrenal Medulla							-				
Not in plane of section							C				
One of pair present		P			Ρ			P			
Within Normal Limits		X	X	X	X	X		Х	X	Х	χ
Aorta								-			
Tissue Not Present		C									
Within Normal Limits			X	X	Χ	Х	Х	Х	Х	Х	Х
Bone Marrow, Femur											
Within Normal Limits		χ	Х	X	X	X	Х	X	χ	X	Х
Brain, Cerebellum											
Within Normal Limits		X	X	χ	Х	Х	χ	Х	χ	X	Х
Brain, Cerebrum					-,	-					
Within Normal Limits		Χ	Х	X	Х	X	X	X	Х	Х	Х
Brain, Medulla Oblongata											
Within Normal Limits		χ	χ	X	X	X	X	Х	X	χ	Х
Brain, Midbrain				-				-			
Within Normal Limits		X	Х	Х	Х	X	Х	Х	X	Х	Х
Brain, Pons											
Within Normal Limits	•	X	Х	X	X	Х	Х	Х	Х	Х	Х
Duodenum											
Within Normal Limits		Х	Х	χ	х	X	Х	х	Х	χ	X
Epididymis											
Tissue Not Present							С				
Within Normal Limits		X	х	Х	Х	X		х	х	х	Х
Esophagus											
Within Normal Limits		Х	Х	х	Х	X	Х	х	х	Х	χ
Heart											
Hemorrhage								3			
Within Normal Limits		X	x	x	X	X	Х		x	X	¥
Intestine											
Within Normal Limits		¥	¥			Х					
		^	^	^	^	^	^	^	^	^	^

Project: 55-YJ81-91 Species: Rat Sex: Male Group: (2) O PPM/RESTRICTED DIET

		9	-	9	9	9	-	-	_	•	•
·		-		2	2	~	۲.	~	~	2	2
	Animal Number:	. 0	0	0	0	n	0	'n	0	0	Ô
		7		-					_	_	8
	•	9	9	9	9		-			0	0
		3	4	5	6	7	8	9	o	1	2
	Fate:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Organ/	Death Day:	9	9	9	9	9	9	9	9	9	. 9
Diagnosis		0	0	0	0	0	0	0	0	0	0
Kidney		-			. -		- -				
Regeneration, tubular								2			
Within Normal Limits		X	X	X	X	X	X		X	X	X
Liver		-									
Microgranuloma						2				2	2
Within Normal Limits		X	X	X	X		X	Х	X		
Lung	•	•			-	-					
Hemorrhage		2		2				2			
Within Normal Limits			X		X	X	X		X	Χ	X
Lymph Node											
Within Normal Limits		X	X	X	Χ	X	Х	χ	. X	Х	Х
Nerve, Peripheral									- 		
Within Normal Limits		X	χ	X	X	X	X	X	X	Х	X
Pancreas				-							
Within Normal Limits	•	X	X	Χ.	X	χ	X	X	Χ	X	X
Parathyroid	•					- 	 -				
Not in plane of section		С				C					
One of pair present				P					P		
Within Normal Limits			Х	X	X		X	X	Χ	X	Х
Pituitary											
Embryonic remnant							Ρ				
Within Normal Limits Prostate		X	X 	X	X	X		Х	X	Х	Х
Inflammation, subacute	, ,	3		3			2				3
Within Normal Limits		_		•	Y	Y		Y	х		,
Salivary Gland					·	· -		·			
Within Normal Limits		Y	X	Y	Y	Y	ν	ν.	v	v	v
Seminal Vesicle											
Within Normal Limits			X								
Skeletal Muscle										^	^
Within Normal Limits		¥	Х	¥	¥	Y	Y	Y	Y	ν	Y
Skin				^ 	^ 		·			^	_
Within Normal Limits	• .	X	X	X	Χ	Х	X	X	X	X	X

Project: 55-YJ81-91 Species: Rat Sex: Male Group: (2) O PPM/RESTRICTED DIET

		9	9	9	9	9	9	9	9	9	9
		2	2	2	2	2	2	2	2	2	2
•		•			-		-			-	
	Animal Number:	0	0	0	0	0	0	0	0	0	0
		7	7	7	7	7	7	7	8	8	8
		9	9	9	9	9	9	9	0	Đ	0
		3	4	5	6	7	8	9	. 0	1	.5
	Fate:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Organ/	Death Day:	9	9	9	9	9	9	9	9	9	9
Diagnosis	·	0	0	0	0	0	0	0	0	0	0
Spinal Cord											
Within Normal Limits		Х	х	х	х	х	Х	х	х	x	х
Spleen											
Within Normal Limits		Х	X	х	x	Х	Х	х	х	X	х
Stomach, Glandular											
Within Normal Limits		χ	Х	Х	Х	Х	Х	х	X	х	х
Stomach, Nonglandular											
Within Normal Limits	•	Х	X	Х	Х	Х	Х	Х	Х	Х	Х
Testis											
Within Normal Limits		X	X	Χ	Х	Х	X	х	Х	х	X
Thymus								- 			
Hemorrhage		2	.3	2				2	2	3	2
Within Normal Limits					Х	Х	X				
Thyroid			-								
Embryonic remnant	•				Р			Р			
Within Normal Limits		Х	X	X		х	Х		Х	х	χ.
Tongue	4										
Within Normal Limits		Х	Х	Х	χ	х	х	Х	х	х	х
Trachea				 -				-			
Within Normal Limits		Х	Х	X	X	Х	Х	Х	X	Х	Х
Urinary Bladder											
Within Normal Limits		X	X	X	X	X	X	X	X	χ	X

Project: 55-YJ81-91 Species: Rat Sex: Male Group: (3) 500 PPM

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			2	2	2	2	2	2	2	.2	2	2
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	Animal	Number:	0	0	0	0	0	0	0	0	0	G
			7	7	7	7	7	7	7	7	7	7
			2	2	2	2	2	2	2	3	3	3
			3	4	5	6	7	8	9	0	1	2
	•	Fate:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Organ/	Dea	ath Day:	9	9	Q	٥	a ⁻	٥	۵	۵	9	9
Diagnosis				Ó	-	-	-	-	-	•		-
Admonal Cambara												
Adrenal Cortex												
Within Normal Limits				X								
Adrenal Medulla		,										
One of pair present					P	P					P	P
Within Normal Limits			X	X	X	X	X	X	X	Χ	X	X
Aorta								 -		-		
Within Normal Limits			Χ	X	X	X	X	X	X	X	X	X
Bone Marrow, Femur				- 								
Within Normal Limits			X	X	Χ	Х	X	X	Χ	Χ	X	X
Brain, Cerebellum												
Within Normal Limits			Χ	X	Χ	χ	X	X	Х	X	X	Х
Brain, Cerebrum				- 								·
Within Normal Limits			Х	χ	Х	Х	X	Х	х	х	Х	Х
Brain, Medulla Oblongata				-								
Within Normal Limits			Х	Χ	х	Х	Х	Х	х	X	X	X
Brain, Midbrain												
Within Normal Limits			х	Х	X	X	X	X	x	Y	Y	¥
Brain, Pons												
Within Normal Limits			· X	х	Y	y ·	γ	¥	Y	Y	v	Y
Duodenum												
Within Normal Limits				X								
Epididymis					^_			^	^			^
Within Normal Limits			v	χ	v	v	v	v	v	v	v	v
Esophagus				<u>.</u>								
Within Normal Limits												
Heart				Х 								
Within Normal Limits												
Intestine				X								
Within Normal Limits				X								
Kidney												-
Intratubular proteinic mat	terial				2							
Regeneration, tubular					2	2			2		X	
Within Normal Limits			X	X			X	X		X	X	X

Project: 55-YJ81-91 Species: Rat Sex: Male Group: (3) 500 PPM

			9.	9	9	9	9	9	9	9	9	9
			2	2	2			2		2		
	Animal	Number:		0				0		0	0	0
				7		7		7		7		
			2	2				2				
								8			1	2
		Fate:									•	_
		, _ , _ ,	-		-	-	-	-		-		-
Organ/	Dea	ath Day:	9	9	9	9	9	9	9	9	9	9
Diagnosis		, -	0					0				0
			Ī	•	_	Ī	-	Ĭ		•	_	_
Liver		•										
Cytoplasmic vacuolization			3	4	4	4	4	4	4	4	4	3
Microgranuloma				2				2				
Lung												
Congestion								3				
Inflammation, interstitia	ι					2						
Within Normal Limits			Х	х	х		X		X	х	Х	χ
Lymph Node								- 				
Within Normal Limits			Х	Х	Х	Х	Х	Х	Х	Х	Х	X
Nerve, Peripheral												
Within Normal Limits			Х	χ	Х	. X	Х	X	Х	Х	Х	Х
Pancreas												
Hemorrhage			2									
Inflammation, subacute			2									
Within Normal Limits				X	X	X	Х	Х	Χ	X	Х	X
Parathyroid												
Not in plane of section		-				C	C					
One of pair present			Р	P	P				P	P	P	P
Within Normal Limits			X	X	Х			χ	X	X	X	X
Pituitary												
Within Normal Limits			X	X	Х	X	χ	Х	X	X	X	X
Prostate												
Inflammation, subacute			2		4		•				3	
Within Normal Limits				X		Χ	X	χ	X	X		X
Salivary Gland												
Tissue Not Present			С									
Within Normal Limits				X	X	X	χ	X	X	X	X	X
Seminal Vesicle												
Within Normal Limits			X	X	X	X	Х	Х	Х	Х	X	X
Skeletal Muscle												
Within Normal Limits			X	X	X	X	X	X	X	X	Х	X
Skin												
Tissue Not Present			С									
Within Normal Limits				X	X	X	X	X	X	X	Х	X
							•					

Project: 55-YJ81-91 Species: Rat Sex: Male Group: (3) 500 PPM

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1	4	2	2	2	2	2	2	2	2	2	2
	A	-	:	-	-	•	•	•	•	•	-
	Animal Number:	_	0		0					-	0
		7	-	•				7	7	7	7
		2	2	2		2 7		_	_	3	3
	Fate:	-	_	_	_	-	_	9 SE	_	•	2 SE
Organ/	Dooth Dove	9	9	9	_	_	^	_	_	_	_
Diagnosis	Death Day:	0	_	-		9		9	-	9	-
5 (agi,05 i 5		U	U	U	U	0	U	0	U	0	O
Spinal Cord			· -		-		- -		. .		
Within Normal Limits		x	x	¥	Y	¥	Y	Y	¥	X	v
Spleen											
Within Normal Limits		х	х	Х	х	X	Х	X	¥	х	¥
Stomach, Glandular											
Within Normal Limits		χ	х	Х	Х	Х	Х	х	х	Х	x
Stomach, Nonglandular										<u></u> -	
Within Normal Limits	•	Х	Х	Х	Х	Х	X	Х	Х	Х	х
Testis											
Within Normal Limits		X.	X	χ	Χ	Х	χ	Х	Х	χ	Х
Thymus			- - -							-	
Hemorrhage			2			2	2		2	2	2
Within Normal Limits		Χ		X	X			Х			
Thyroid				-			.				
Embryonic remnant		P									Р
One of pair present						P					
Within Normal Limits			Х	X	X	X	X	X	X	X	
Tongue				-,							
Within Normal Limits Trachea		X	Х	Х	Х	X	X	X	Х	X	X
Within Normal Limits											
Urinary Bladder		X	Х	Х	Х	Х	X	Х	X	X	X
Within Normal Limits				· ·	·					-	
ATTENDED TO HIGH LIMITS		X	X	X	X	X	X	X	X	Х	Х

Project: 55-YJ81-91 Species: Rat Sex: Male Group: (4) 1000 PPM

		9	9	9	9	9	- 9	9	9	9	9
	e e	2	2	2	2	2	2	2	2	2	2
					-	•				-	
	Animal Number:									0	
										7	
•										4	4
					6					1	
	Fate:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Organ/	Death Day:	9	9	9	9	9	9	9	9	9	9
Diagnosis									-	Ó	
Adrenal Cortex				- -							
Within Normal Limits		v	v	v	v	v	v	v	v	χ	v
Adrenal Medulla							·				
Within Normal Limits		Y	¥	Y	¥	Y	v	v	v	Х	v
Aorta											
Tissue Not Present									С		
Within Normal Limits		x	x	¥	¥	¥	¥	Y		X	Y
Bone Marrow, Femur											
Within Normal Limits		х	х	Х	х	х	х	х	x	X	X
Brain, Cerebellum											
Within Normal Limits		Х	Х	Х	Х	X	Х	χ	Х	Х	Х
Brain, Cerebrum								-			
Within Normal Limits		X	Χ	Х	Х	Х	X	Х	Х	Х	Х
Brain, Medulla Oblongata											
Within Normal Limits		Х	X	X	Х	X	Х	Х	Х	Х	Х
Brain, Midbrain											
Within Normal Limits		Χ	X	X	X	X	χ	X	χ	X	X
Brain, Pons											
Within Normal Limits		χ	X	X	X	χ	Х	Χ	X	Х	Х
Duodenum											
Within Normal Limits										X	
Epididymis											
Hypospermia					4			_		5	
Inflammation, granulomatou	ıs							4			
Within Normal Limits		Х	Х	X		X	Х		X		Х
Esophagus											
Within Normal Limits Heart										X 	
Cardiomyopathy					3						
Within Normal Limits		v	v	v		v	v	v	v	·	v
Intestine		Λ	^ 	^		^	^	۸ 	. A	Х	۸.
Within Normal Limits		X	x	Х	х	X	X	X	X	Х	Υ
						•		•		^	^

Project: 55-YJ81-91 Species: Rat Sex: Male Group: (4) 1000 PPM

			9 2	9 2	9	-	-	-	_	9	9	9
			2	2	2	2	. 2	2	2	2	2	2
	Animal	Number:	0	0	0	0	Ö	0	0	0	0	0
	AITIMAL	Number.	7		7	7	7	7	7	7	7	7
			3	3	3	3	3	3	-	4	4	4
			3	4	5	-	7	8	9	0	1	2
		Fate:	_	-	_	_		_		_	-	_
Organ/	Dea	ath Day:	9	9	9	9	9	9	9	9	9	9
Diagnosis			0	0	0	0	0	0	0	0	0	0
Kidney												
Inflammation, interstition										2		
Intratubular proteinic ma	aterial				2							
Regeneration, tubular				2			2			2		
Within Normal Limits			Х			X		Х	Х		χ	X
Liver												
Cytoplasmic vacuolization	1 .			4		4		4	4	-	4	4
Microgranuloma			2		2		2			2		2
Lung												
Alveolar histiocytosis Hemorrhage			,								2	2
Inflammation, interstitie	.1		3				2					
Within Normal Limits	10	÷		v	v	v	2	v	v .	v		
Lymph Node						Х 						
Within Normal Limits			х								Х	v
Nerve, Peripheral												
Within Normal Limits			¥	y.	Y	Y	Y	Y	Y	Y	х	x
Pancreas												
Inflammation, subacute				2		2			4			
Within Normal Limits			х				х	X	•	X	х	х
Parathyroid									- · -			
Not in plane of section							С					
One of pair present			Р	Ρ	P	Р		₽			Р	
Within Normal Limits			χ	X	X	Х		Х	Х	X	Х	χ
Pituitary												
Within Normal Limits		,	X	Х	X	X	X	X	X	X	Χ	χ
Prostate						- -						
Inflammation, subacute			2			2						
Within Normal Limits				X	X		X	X	X	X	X	X
Salivary Gland					· -							
Within Normal Limits	-		X	· X	X	X	X	X	X	X	X	X
Seminal Vesicle					·						 -	
Within Normal Limits			X	X	X	X	Χ	X	χ	X	X	X

Project: 55-YJ81-91 Species: Rat Sex: Male Group: (4) 1000 PPM

		_	_	_	_	_	_	_	_	_	_
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	Animal Number:	-	0		0	•	-	٠	0	٠	
	Allinat Number:				7						0 7
		3			3	-		-		4	
		3			6	-				1	-
*	Fate:	_		-	_	-		-	_	-	_
	rucc.		-	-	-	02	٠.	Ů.	0_	-	-
Organ/	Death Day:	9	9	9	9	9	9	9	9	9	9
Diagnosis		0	0	0	0	0	0	0	0	0	0
•											
Skeletal Muscle											
Within Normal Limits		Χ	X	X	Х	Х	χ	Х	Х	Х	X
Skin											
Within Normal Limits		X	X	X	X	X	X	X	X	. X	X
Spinal Cord											
Within Normal Limits		X	X	X	Х	X	X	X	X	Х	X
Spleen											
Within Normal Limits		Χ	Х	Х	X	χ	X	X	X	X	X
Stomach, Glandular											
Within Normal Limits		X	Х	Х	Х	X	Χ	X	X	X	X
Stomach, Nonglandular											
Within Normal Limits		X	X	X	Х	X	X	X	X	Х	X
Testis											
Dilatation, tubular		3	٠.			_		_		_	
Hypospermatogenesis					4						
Within Normal Limits			Х				Х		Х		Х
Thymus											
Hemorrhage Within Normal Limits		.,	10		2	_		_		_	
Thyroid	•	X	Х.	Х			. Х		X		X
Embryonic remnant		- **				P					
One of pair present		Р				r					
Within Normal Limits		-	v	v	X		v	ν.	v	v	v
Tongue			<u>,</u>								
Within Normal Limits		Y	Y	¥	х	Y	¥	¥	¥	Y	Y
Trachea											
Within Normal Limits		Х	Х	х	х	Х	Х	х	Х	Х	X
Urinary Bladder											
Tissue Not Present											C
Within Normal Limits	•	х	х	Х	х	х	х	х	х	х	-
•	•					••		•	•		

Project: 55-YJ81-91 Species: Rat Sex: Male Group: (5) 2000 PPM

			9	9	9	9	9	9	9	9	9	9
			2	2								
			-	•	•	-	. •	•	•	-	-	
	Animal	Number:										
				7								
•			-	4				-	•	-	_	-
		roto.	3					8				_
•		Fate:	35	3E	25	2E	SE	5E	2F	SE	SE	SE
Organ/	Dea	ith Day:	٥	9	٥	a	0	۵	٥	۵	a	a
Diagnosis	000	icii bay.		Ó	-	-	-	•	-		-	-
			٠	٠	Ū	Ü	Ü	٠	u	U	U	U
Adrenal Cortex				-			. 	-			 -	
Within Normal Limits			X	X	Х	Х	Х	X	Х	Х	· x	X
Adrenal Medulla									-			
One of pair present								Р				Ρ
Within Normal Limits			X	X	Х	· X	X	X	X.	Χ	X	X
Aorta			- -				-					
Tissue Not Present	•					C			C	C		
Within Normal Limits			X	X	X		X	X			X	X
Bone Marrow, Femur												
Within Normal Limits		•	X	X	X	Х	X	X	X	χ	X	X
Brain, Cerebellum												
Tissue Not Present									C			
Within Normal Limits				X.								
Brain, Cerebrum												
Tissue Not Present									С			
Within Normal Limits				X						X	X	X
Brain, Medulla Oblongata												
Tissue Not Present									С			
Within Normal Limits Brain, Midbrain			Х	X	Х	Х	Х	Х		Х	Х	X
Tissue Not Present												
Within Normal Limits		-	v	v	v	v	v	v		.,	v	v
Brain, Pons		*	^	X		Α	Х	Χ		X	Х	X
Tissue Not Present .									С			
Within Normal Limits		*	v	х	v	v	v	v		v	v	v
Duodenum			^ 				^				^	
Within Normal Limits			Y	X	¥	Y	γ	v	v	v	v	v
Epididymis					· -							
Granuloma, spermatic	•											4
Hypospermia			4	5	5	5	5	4	4	4	4	-
Inflammation, subacute			•	-	-	-	-	2	•	7	_	-
One of pair present								_	Р			
									-			

Project: 55-YJ81-91 Species: Rat Sex: Male Group: (5) 2000 PPM

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	9	9	9	9	9	9	9	9	9	9
	2	-			2			2		
Animal Number:	. 0	Đ	0	0	0	0	0	0	0	0
	7	7	7	7	7	7	7	7	7	7
	4	4	4	4	4	4	4	5	5	5
	3	4	5	6	7	8	9	0	1	2
Fate:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Ones /	_	_	_	_	_	_	_	_	_	_
Organ/ Death Day:		9								9
Diagnosis	U	O	0	Ü	O	0	0	0	0	0
Esophagus									· -	
Within Normal Limits	x	x	¥	Ý	¥	¥	¥	Y	х	¥
Heart										
Cardiomyopathy	3	3	3	3	2	2	3			3
Within Normal Limits		_	_	_	_	_	_		х	
Intestine										
Within Normal Limits	Х	Х	Х	Х	Х	Х	Х	Х	Х	X
Kidney										
Hemorrhage									5	
Hydronephrosis		4		4						
Inflammation, interstitial			2							
Intratubular proteinic material			2	2				2	2	
Necrosis									5	
Regeneration, tubular	2		2		2			2		
Within Normal Limits						Х	X			χ
Liver		-			,-					
Cytoplasmic vacuolization									4	4
Inflammation, subacute	2	2				3	2		2	
Microgranuloma			2	2	2					2
Necrosis, coagulative	(3)									
Lung						-,	-,			
Alveolar histiocytosis									2	
Within Normal Limits	Х	Χ.	X	X	X	X	X	X		Х
Lymph Node										
Within Normal Limits									X	Х
Nerve, Peripheral		·								
Within Normal Limits									X	Х
Pancreas										
Inflammation, subacute								3		
Within Normal Limits	Х	X	Х	X	Х	Х	Х		χ	X,
Parathyroid										
Not in plane of section		_		C	_	C	_		_	
One of pair present		P			P		P		P	
Within Normal Limits	Х	Х	X		X		X	X	X	X

Project: 55-YJ81-91 Species: Rat Sex: Male Group: (5) 2000 PPM

9 9	9	9	9	9	9	9	9	9
2 2	2	2	2	2	2	2	2	2
•	•	-	٠	-	•		•	•
Animal Number: 0 (0				0	
	7						7	
· · · · · · · · · · · · · · · · · · ·							5	5
	5							2
Fate: SE SE	: 3E	2E	5E	3E	5E	5E	2E	5E
Organ/ Death Day: 9 9	9	9	9	9	9	9	9	9
Diagnosis 0 0	0	0	0	0	0	0	0	0
Pituitary								. .
Tissue Not Present				C				
Within Normal Limits X X	X	X	X		X	Х	χ	X
Prostate								
Inflammation, chronic active	5							
Inflammation, subacute		3		-				
Within Normal Limits X X	:		Χ	Х	Х	Х	X	Χ
Salivary Gland				- - -				
Within Normal Limits X X								
Jeminat vestote								
Within Normal Limits X X	. X							
ondition (1900)								
Within Normal Limits X X Skin	. X	X		X	X	X	Х	Χ
Within Normal Limits X X	· ·		·	v	· ·	· · · ·	v	·
Within Normal Limits X X	Y	Y	Y	Y	Y	¥	Y	¥
Inflammation, subacute							4	
Within Normal Limits X X	х	х	х	х	х	Х		Х
Stomach, Glandular								
Within Normal Limits X X	X	Х	Х	Х	Х	Х	Х	X
Stomach, Nonglandular					. .			
Within Normal Limits X X	X	Х	Х	Х	X	X	Х	χ
Testis								,
Granuloma, spermatic 3								
Hypospermatogenesis 4 5	5	5	5	4	4	4	5	5
Thymus								
Hemorrhage			2	2	2		•	
Within Normal Limits X X							X	
ingrota .								
Embryonic remnant		Ρ	Р					
One of pair present				P				
Within Normal Limits X X							Х	

Project: 55-YJ81-91 Species: Rat Sex: Male Group: (5) 2000 PPM

Animal Number: 0 0 0 0 0 0 0 0 0

Fate: SE
Organ/ Death Day: 9 9 9 9 9 9 9 9 9 9 9

Diagnosis 0 0 0 0 0 0 0 0 0 0 0

Urinary Bladder -----

Within Normal Limits X X X X X X X X X X X

Project: 55-YJ81-91 Species: Rat This report was printed on 06-09-1993.

The Legend to the Outline Report

X = Within Normal Limits

P = Present

C = Comment made

1 = Metastatic

2 = trace

3 = mild

4 = moderate

5 = severe

6 = present NG

7 = focal trace

8 = focal mild

9 = massive

10 =

() = Focal

= Multifocal

[] = Diffuse

SE = Scheduled Euthanasia

ME = Moribund Euthanasia

FD = Found Dead

OT = Other

Project: 55-YJ81-91 Species: Rat Sex: Female Group: (1) 0 PPM

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·		9	9	9	9	9	9	9	9	9	9
		2	2	2	2	2	2	2	2	2	2
		•	•	•				•		•	•
	Animal Number:		0								
		7						7			
		5	_	_	5	_	_	_	_	_	_
•	5 -4	3	•	-	6						2
	Fate:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Organ/	Death Day:	9	9	9	9	9	9	9	9	9	9
Diagnosis	Judan vayı		Ó								-
5.0g,105.0		Ü	. •	Ü	v	·	٠	Ü	٠	Ü	٠
Adrenal Cortex			-								
Within Normal Limits		Х	X	Х	X	X	Χ	Х	Х	Х	Х
Adrenal Medulla											
One of pair present		P	P				P				
Within Normal Limits		X	X	X	X	Х	Х	Χ	Х	X	X
Aorta											
Tissue Not Present					¢						
Within Normal Limits		X	X	X		X	X	X	X	X	X
Bone Marrow, Femur											
Within Normal Limits		X	X	X	X	χ	Χ	X	X	X	X
Brain, Cerebellum											
Within Normal Limits	•	X	X	X	· X	Χ	χ	Χ	Χ	Χ	X
Brain, Cerebrum											
Within Normal Limits		Х	X	X	X	χ	X	X	X	X	X
Brain, Medulla Oblongata											
Within Normal Limits		X	X	X	X	X	X	X	X	X	X
Brain, Midbrain											
Within Normal Limits		X	X	X	X	X	Х	X	X	Χ	X
Brain, Pons	4										
Within Normal Limits		X	X	X	X	X	X	X	χ	χ	Χ
Duodenum											- -
Within Normal Limits			Х								
Esophagus											
Within Normal Limits		Х	X	X	X	X	X	X	X	X	X
Heart					- 						
Within Normal Limits		X	X	X	X	χ	X	X	X	Х	X
Intestine											
Within Normal Limits		Χ	X	X	X	X	Χ.	X	X	X	X
Kidney											
Regeneration, tubular	,								2		
Within Normal Limits		X	X	X	χ	X	χ	X		X	Χ.
Liver											
Cytoplasmic vacuolization	•	3	3	3	3	3	3	4	3	3	4
Microgranuloma			2						2		2

Project: 55-YJ81-91 Species: Rat Sex: Female Group: (1) O PPM

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	Animal Number:						0		0		
		5	7 5		7 5		7		7		
•		3	4	_	6	_	_	_	_	6 1	6 2
	Fate:	_	•					-	_		_
	· iace.	JE	SE	JE	JL	JE	JE	JE	3E	JE	JE
Organ/	Death Day:	9	9	9	9	9	9	9	9	9	9
Diagnosis										Ô	0
_				-		-	-	-	_	_	
Lung							. -		. -		·
Within Normal Limits		Х	Х	Х	Х	Х	Х	X	Х	Х	X
Lymph Node											
Within Normal Limits	•	X	Х	Χ	X	X	X	X	X	X	X
Nerve, Peripheral									-		
Within Normal Limits		X	Χ	X	X	X	X	X	X	X	X
Ovary											
Within Normal Limits		Х	Х	X	Х	Х	Χ	X	X	X	X
Pancreas											
Within Normal Limits										X	
Parathyroid											
Not in plane of section	•			С				C			
One of pair present					P	-			•	Ρ	•
Within Normal Limits		Х	Х		Х	Х	Х		X	Х	X
Pituitary											
Within Normal Limits		Х	Х	Х	Х	Х	Х	Х	Х	X	X
Salivary Gland Within Normal Limits	•	 v									
Skeletal Muscle							_ X			Х	X
Within Normal Limits											 v
Skin										, X 	
Within Normal Limits		¥	x	¥	¥.	¥	x	¥	Y	х	¥
Spinal Cord											
Within Normal Limits		X	x	x	x	x	·x	¥	X	X	x
Spleen											
Within Normal Limits		Х	Х	Х	Х	Х	χ	х	χ	Х	Х
Stomach, Glandular											
Within Normal Limits		χ	х	X	X	Х	Х	Х	Х	Х	Χ
Stomach, Nonglandular			<u> </u>								
Within Normal Limits		X	X	X	Χ.	X	Χ	Х	. X	Х	X
Thymus											
Hemorrhage								2	2	2	
Within Normal Limits		X	X	X	Х	Х	X				X

Project: 55-YJ81-91 Species: Rat Sex: Female Group: (1) 0 PPM

Project: 55-1381-91 8	pecies: kat sex: Fe	mate	9 (oro!	ıp:		1) () PF	'P1		
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		2	2	2	2	2	2	2	2	2	2.
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	Animal Number:		G				0		_	0	0
							7			7	7
		5	_	_	_	_	5			6	6
		3	•	-	-	•	8		_	•	2
	Fate:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Organ/	Death Day:	9	9	9	9	9	9.	9	9	9	9
Diagnosis		0	0	0	0	0	0	. 0	0	0	0
Thyroid									. .		
One of pair present									Р		
Within Normal Limit	s	X	Х	X	X	X	X	X	X	Х	X
Tongue											
Within Normal Limit	s	·X	Х	X	Х	X	X	X	X	Х	X
Trachea											
Within Normal Limit	s	X	X	X	χ	X	X	X	X	X	X
Urinary Bladder											
Within Normal Limit	s	Х	X	X	Х	Х	X	X	X	X	X
Uterus											
Within Normal Limit	S	Х	X	X	Х	X	Х	X	X	X	Х
Vagina		•••								·	·
Within Normal Limit	S	Х	X	Х	Х	X	Х	Х	Х	Х	Х

Project: 55-YJ81-91 Species: Rat Sex: Female Group: (2) O PPM/RESTRICTED DIET

			9	9	9	9	9	9	9	9	9	9
•			2	2	2	2	2	2	2	2	2	2
•												
	Animal	Number:	0	0	0	0	0	0	0	0	0	0
			8	8	8	.8	8	8	8	8	8	8
			0	0	0	0	0	0	0	1	1	1
			3	4	5	6	7	8	9	0	1	2
•		Fate:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
			_	_	_	_		_	_	_	_	_
Organ/	Dea	ath Day:	9						9		9	9
Diagnosis			0	0	0	0	0	O.	0	0	0	0
Adrenal Cortex				. -				. .				
Within Normal Limits			Х	χ	X	X	X	X	Х	Χ	X	X
Adrenal Medulia		•							- - -			
One of pair present												P
Within Normal Limits			X	X	X	X	X	X	X	X	X	X
Aorta												
Tissue Not Present			C			C						
Within Normal Limits											Х	
Bone Marrow, Femur												
Within Normal Limits			Х	Х	Х	Х	Х	Х	Х	Х	Х	X
Brain, Cerebellum												
Within Normal Limits											Х	
Brain, Cerebrum												
Within Normal Limits Brain, Medulla Oblongata											Х	
Within Normal Limits											х	
Brain, Midbrain												
Within Normal Limits			X	х	х	х	х	х	х	х	X	х
Brain, Pons												
Within Normal Limits			Х	Х	Х	Х	X	Х	Х	Х	Х	Х
Duodenum												
Within Normal Limits			X	X	X	Х	Х	Χ	X	Χ	X	X
Esophagus	•					<u></u>						
Within Normal Limits			Х	X	X	X	X	X	X	X	X	X
Heart												
Within Normal Limits			X	X	X	Х	Х	X	X	Х	X	X
Intestine												
Within Normal Limits			Х	Х	X	Х	Χ	Х	, х	X	Х	X
Kidney												
Within Normal Limits											Х	
Liver												
Microgranuloma			2	2	2	2		2	2	.,	2	v
Within Normal Limits	•						X			Х		.Х

Project: 55-YJ81-91 Species: Rat Sex: Female Group: (2) O PPM/RESTRICTED DIET

	-		9	9	9	9	9	9	9	9	9	9	
			2	2	2	2	2	2	2	2	2	2	
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	Animal	Number	: 0	0	0	0			0			O	
e e			8	8	8	8	8	8				8	
			0	_	0	_	0				-	1	
			3	•	5	6	7	8	-	0	1	2	
		Fate	: SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	
Organ/	Dea	ath Day	: 9	9	9	9	9	9	9	9	9	9	
Diagnosis			0	0	0	0	0	0	0	0	· 0	0	
Lung													
Alveolar histiocytosis											2		
Within Normal Limits			X	X	X	X	X	X	X	X		X	
Lymph Node													
Within Normal Limits			Х	X	X	X	χ	X	Х	X	Х	X	
Nerve, Peripheral													
Within Normal Limits											Х		
0vary													
One of pair present					₽								
Within Normal Limits			Х	X	X	Х	X	X	Х	Х	X	X	
Pancreas							·			· ·			
Within Normal Limits										Х	Х	Х	
Parathyroid													
Not in plane of section			_	С				_		ť	С	Ç,	
One of pair present			P		v		v						
Within Normal Limits			X		X	X	X	X	X				
Pituitary			~	· · ·		· ·	· ·	·		· ·	v	·	
Within Normal Limits Salivary Gland			Α.								Х		
Within Normal Limits			¥	¥	Y	v	¥	¥	Y	Y	х	¥	
Skeletal Muscle													
Within Normal Limits			¥	Y	Y	¥	Y	¥	¥	Y	Х	¥	
Skin													
Within Normal Limits			x	¥	x	х	x	X	X	X	Х	Х	
Spinal Cord													
Within Normal Limits			х	Х	Х	х	Х	х	Х	Х	Х	χ	
Spleen													
Within Normal Limits			Х	Х	χ	Х	Х	Х	X	Х	Х	Х	
Stomach, Glandular										-,			
Mineralization					3								
Within Normal Limits			Х	X		Х	Χ	Х	X	Х	X	X	
Stomach, Nonglandular													
Within Normal Limits			Х	X	X	Х	X	X	X	X	X	X	

Project: 55-YJ81-91 Species: Rat Sex: Female Group: (2) O PPM/RESTRICTED DIET

		9	9	9	9	9	9	9	9	9	9
		2	2	2	2	2	2	2	2	2	2
		-		•			-		-	•	
	Animal Number:	_	_	_	_		_	_	0	_	0
*		8	_	_	_	8	_	_	8	_	8
		0	_	_	0	_		_		1	1
r f	•	3		-	6	٠	8	9	0	1	2
	Fate:	SE	SE	SE							
Organ/	Death Day:	9	9	9	9	9	9	9	9	9	9
Diagnosis	_	0	0	0	0	0	0	0	0	0	0
Thymus										. 	· - -
Hemorrhage		2	2	2	2	2		2	2	2	
Within Normal Limits							X				X
Thyroid					·					·	
One of pair present			P		P			P		P	P
Within Normal Limits		X	X	X	X	Х	X	X	· X	X	X
Tongue										·	
Within Normal Limits		X	X	X	X	X	Х	χ	Х	X	X
Trachea	•										
Within Normal Limits		X	X	X	X	X	X	X	Х	χ	X
Urinary Bladder											
Within Normal Limits		Х	Х	Х	X.	X	X	X	X	X	Х
Uterus.											
Hydrometra				3			3		3		
Within Normal Limits		Χ	X		Х	Х		X		Х	χ
Vagina											
Tissue Not Present			C								
Within Normal Limits		Х		Χ	X	X	X	χ	χ	X	X

Project: 55-YJ81-91 Species: Rat Sex: Female Group: (3) 500 PPM

		9	9				9		9		9
		_. 2	2	2	2	2	2	2	2	2	2
					:		٠				
•	Animal Number:	7	0 7	7	7	7		0	7		0 7
•		6	•					6			7
		3	4					9			2
	Fate:	_	•	-	_		_		-		_
Organ/	Death Day:	9	9	9	9	9	9	9	9	9	9
Diagnosis		0	0	0	0	0	0	0	0	0	0
Adrenal Cortex											
Within Normal Limits		X	х	X	х	X	х	х	х	Х	х
Adrenal Medulia											
Within Normal Limits		Х	х	х	X	Х	х	Х	Х	Х	Х
Aorta											
Tissue Not Present					£						
Within Normal Limits	•	X	X	Х		X	. X	X	X	X	X
Bone Marrow, Femur						-					
Within Normal Limits		Х	X	Х	X	X	X	X	X	X	Х
Brain, Cerebellum						·					
Within Normal Limits								Х.		X	Х
Brain, Cerebrum		-									
Within Normal Limits		X	X	X	Х	X	X	X			
Brain, Medulla Oblongata Within Normal Limits					··	·	··	··	· · · ·	·	 v
Brain, Midbrain	•							. .		Х	
Within Normal Limits										х	X
Brain, Pons							. .				
Within Normal Limits		Х	Х	Х	Х	Х	Х	Х	Х	Х	X
Duodenum								- - -			
Within Normal Limits		X	X	X	Х	X	X	X	X	X	X
Esophagus										,-	
Within Normal Limits										X	X
Eye											
Within Normal Limits					Х						
Heart											
Within Normal Limits										X	X
Intestine											·
Within Normal Limits										X 	
Kidney Within Normal Limits										X	
Liver											
Cytoplasmic vacuolization	,	3	4	3	4						
Microgranuloma			2				2	2	2	2	
		_	_	_							

Project: 55-YJ81-91 Species: Rat Sex: Female Group: (3) 500 PPM

· ·		_	_	_	_	_	_	_	_	_	_
		9	9	_	9	-	-	-	9	9	9
		2	2	2	2	2	2	2	2	2	2
	A		٠	•	•	•	•			٠	•
	Animal Number:		0		0	0		0	0	0	0
		7	7		7	7		7	7	7	7
·		6 3		6		6	6	6	7	7 1	7 2
	Fate:	_		5		7		9		•	
	race.	3E	JE	36	36	3E	3E	JE	35	3E	JE
Organ/	Death Day:	9	9	9	9	9	9	9	9	9	9
Diagnosis	55551. 54y.						Ó				
D tagnes to		Ū	Ū	Ū	Ū	Ū	Ī	•	_	_	•
Liver										(cont
Within Normal Limits						X					χ
Lung								-			
Within Normal Limits		X	X	X	X	X	X	X	Χ	X	X
Lymph Node											
Within Normal Limits		X	χ	X	X	X	X	X	X	X	Χ
Nerve, Peripheral											
Within Normal Limits		X					X				
0vary	•										
Within Normal Limits		Х					Х				
Pancreas											
Within Normal Limits							Х				
Parathyroid	•										
Not in plane of section		¢	C			Ç		С			
One of pair present				P			Þ				P
Within Normal Limits				Х	Х		Х		Х	Х	X
Pituitary											
Within Normal Limits		Х					Х				
Salivary Gland											
Within Normal Limits		Х					X				
Skeletal Muscle											
Within Normal Limits							Х				
Skin											
Tissue Not Present		.,	.,	.,	С	v	٠,	.,		.,	
Within Normal Limits							Х				
Spinal Cord											
Within Normal Limits		X					X 				
Spleen		v									
Within Normal Limits		Α -					X 				
Stomach, Glandular Within Normal Limits		. 🕶									
		X					X 				
Stomach, Nonglandular	•	v									
Within Normal Limits		X	X	χ	X	X	Х	X	X	X	X

x x x x x x x x x x

Project: 55-YJ81-91 Species: Rat Sex: Female Group: (3) 500 PPM 9 9 9 9 9 9 9 9 2 2 2 2 2 2 2 Animal Number: 0 0 0 0 777777777 6 6 6 6 6 6 7 7 7 3 4 5 6 7 8 9 0 1 2 Fate: SE SE SE SE SE SE SE SE SE Organ/ Death Day: 9 9 9 9 9 9 9 9 9 Diagnosis 0 0 0 0 0 0 0 0 0 0 Thymus 2 2 2 2 Hemorrhage Within Normal Limits \mathbf{X} \mathbf{X} \mathbf{X} \mathbf{X} Thyroid Embryonic remnant One of pair present Within Normal Limits Tongue Within Normal Limits Trachea Within Normal Limits Urinary Bladder Within Normal Limits \mathbf{X} \mathbf{X} \mathbf{X} \mathbf{X} \mathbf{X} \mathbf{X} \mathbf{X} \mathbf{X} \mathbf{X} \mathbf{X} Uterus Hydrometra Within Normal Limits $X \quad X \quad X \quad X$ $\mathbf{X} \quad \mathbf{X} \quad \mathbf{X}$

Vagina

Within Normal Limits

Project: 55-YJ81-91 Species: Rat Sex: Female Group: (4) 1000 PPM

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	Animal Number:	0	0						0	0	0.	
		7	7	7	7	7	7	7	7	7	7	
•		7	7	7	7	7	7	7	8	8	8	
		3	4	5	6	7	8	9	0	1	2	
	Fate:	SE	SE	SE	SE							
Organ/	Death Day:	9	9	9	9	9	9	9	9	9	9	
Diagnosis										0		
Adrenal Cortex	•											
Within Normal Limits		Y	¥	Y	Y	Y	Y	Y	· Y	х	Y	
Adrenal Medulla												
One of pair present							D		P			
Within Normal Limits		v	v	v	v	v	-		•	X	v	
Aorta					·							
Tissue Not Present								c				
Within Normal Limits		Y	¥	У	Y	Y	¥	-	¥	X	Y	
Bone Marrow, Femur					·			. .				
Within Normal Limits		v	Y	v	v	٧	v	v	v	X	v	
Brain, Cerebellum												
Within Normal Limits										χ		
Brain, Cerebrum								^		^	^	
Within Normal Limits	•	v	v	v	v	v	v	v	v	v	v	
Brain, Medulla Oblongata										X		
Within Normal Limits												
										X		
Brain, Midbrain												
Within Normal Limits										X		
Brain, Pons												
Within Normal Limits										X		
Duodenum												
Within Normal Limits		Х	Х	Х	Х	Х	Х	Х	Х	X	Х	
Esophagus												
Within Normal Limits										Х		
Eye												
Within Normal Limits								X				
Heart												
Within Normal Limits										X		
Intestine												
Within Normal Limits										X		
Cidney												
Intratubular proteinic m	aterial			3								
Regeneration, tubular	•			3								
Within Normal Limits		X	X		X	χ	X	Х	X	X	X	
	-											

Project: 55-YJ81-91 Species: Rat Sex: Female Group: (4) 1000 PPM

•											
		. 9	•		9		9		9	9	9
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								-			
· · · · · · · · · · · · · · · · · · ·	Animal Number:		0	0		0	0	0	0	0	0
		7	7	7	7	7	7	7	7	7	7
		7	7	7	7	7	7	7	8	8	8
		. 3	4	5	6	7	8	9	0	1	2
	Fate:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Organ/	Death Day:	9	9	9	9	9	9	9	9	9	9
Diagnosis			O			-	-	-	-	_	-
3		_	•	Ū	Ū	-	-	Ū			Ū
Liver			. -								
Cytoplasmic vacuolization				4	3	4	4	4	4	4	4
Inflammation, subacute				2		2				2	
Microgranuloma			-2	2	2			2	2	2	2
Within Normal Limits		Х									
Lung											
Within Normal Limits		х	Χ	·X	х	Х	Х	Х	Х	Х	Х
Lymph Node											
Within Normal Limits		Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
Nerve, Peripheral											
Within Normal Limits		Х	х	х	Х	X	χ	х	Х	х	X
Ovary											
Within Normal Limits		Х	Х	Х	х	Х	X	Х	Х	Х	X.
Pancreas											
Within Normal Limits		Х	Х	Х	X	Х	Х	Х	Х	Х	χ
Parathyroid											
Not in plane of section		С							С		
One of pair present	•		Р		Р	Р	P	P		ρ	
Within Normal Limits			X	X	Х	X	Х	Х		Х	Х
Pituitary											
Within Normal Limits		X	Х	Х	X.	Χ	Х	Х	Х	X	X
Salivary Gland											
Within Normal Limits		Х	Х	Х	X	X.	Х	Х	Х	Х	Χ
Skeletal Muscle											
Within Normal Limits		X	X	X ·	Χ	Χ	Х	X	χ	χ	χ
Skin										- - -	
Within Normal Limits		Χ	Х	X	Х	X	Х	Х	X	Х	χ
Spinal Cord							,-				
Within Normal Limits		Χ	Х	X	χ	X	X	X	Х	Х	Х
Spleen	•			·							
Within Normal Limits		X	X	Χ	Х	X.	X	Х	X	X	X
Stomach, Glandular		:									
Within Normal Limits		X	X	X	Х	X	Х	X	X	Х	Х
· ·											

Project: 55-YJ81-91 Species: Rat Sex: Female Group: (4) 1000 PPM

	9	9	9	9	9	9	9	9	9	9
•	2	2	2	2	2	2	2	2	2	2
	•	•	-				•		•	
Animal Number:						_	_	0	0	0
	-	-	•	-	-	-	-	-	-	7
	•	•						_	-	_
Fatar	-	•	-	_	-	_		_	•	2
rate.	JE	JE.	3E	J.	3L	JL	JE	JL	JL	JE
Death Day:	9	9	9	9	9	9	9	9	9	9
	0	0	0	0	0	0	0	0	0	0
									<u>:</u> _	
	X	X	Х	X	X	Х	X	Х	X	Х
									. -	
							_			2
	X	X	Χ	X	Х	X			X	
•								P	₽.	
			•							
	X	X	Х	Х	Х	Х	· X			χ
	v	v		v	÷	v	•	v	v	v
4		. A	_ X		. X	Х				
	¥	¥	¥	v	v	v	¥	v	v	¥
	X	X	Х	X	X	X	X	X	X	Х
•			4			2				
	X	X		X	·Χ		χ	Χ	X	X
	X	Х	X	Х	Х	Х	Х	Х	Х	Х
		Animal Number: 0 7 7 3 Fate: SE Death Day: 9 0 X X X X X X X	2 2 Animal Number: 0 0 7 7 7 7 7 3 4 Fate: SE SE Death Day: 9 9 0 0 X X X X X X X X X X X X	2 2 2 Animal Number: 0 0 0 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2

Project: 55-YJ81-91 Species: Rat Sex: Female Group: (5) 2000 PPM

	Animal Number:	9 2 0 7 8 3	9 2 0 7 8 4	0 7 8	2 0 7	2 0 7 8	0 7 8		9 2 . 0 7 9	9 2 0 7 9	9 2 0 7 9 2
	Fate:	_		_	_		_	•	-	•	_
Organ/ Diagnosis	Death Day:	9 0				9 0			9	9 0	9 0
Adrenal Cortex											 .
One of pair present Within Normal Limits Adrenal Medulla	·		X			х	x	х	Х	X	х
One of pair present Within Normal Limits		х	x		P X		P	P X	x	X	x
Aorta Tissue Not Present Within Normal Limits		c	х	х	 x	х	х	 х	 х	х	 x
Bone Marrow, Femur Within Normal Limits Brain, Cerebellum		x	 х	 х	 х	х	 х			x	 х
Within Normal Limits Brain, Cerebrum			X 								
Within Normal Limits Brain, Medulla Oblongata Within Normal Limits			Х Х		 -						
Brain, Midbrain Within Normal Limits		Х				 X					
Brain, Pons Within Normal Limits Duodenum		χ	 х	х	X	X	X	X	X		X
Within Normal Limits Esophagus		х 	х 	х 	х 	х 	х 	х 	х 	х 	х
Within Normal Limits Heart Within Normal Limits			Х 								
Intestine Within Normal Limits			 X							- 	:
Kidney Intratubular proteinic ma	iterial								3		
Regeneration, tubular Within Normal Limits		х Х	x	X	X	X	X	X	3	X	2

Project: 55-YJ81-91 Species: Rat Sex: Female Group: (5) 2000 PPM

No.												
			9	9	9	9	9	9	9	9	9	9
			2	2	2	2	2	2	2	2	2	2
·					-		-	•	•		:	•
	Animal	Number:		0					0			0
			7	7	-	7	7					7
			8 3	8 4		8	8 7	8 8	8 9		9 1	9
		Fate:	_	-	_	_	-		_	_	-	_
		iace.	JL	JL	JL	JL		٥.	J.	JL	JL	-
Organ/	De	ath Day:	9	9	9	9	9	9	9	9	9	9
Diagnosis		•	0	0	0	0	0	0	0	0	0	0
Liver												
Cytoplasmic vacuolization	1 -		4	4	4	4	3	3			5	4
Inflammation, subacute			_			_		_	2			_
Microgranuloma			2	2	. 2	2		2	2	2	2	2
Lung												
Alveolar histiocytosis				2	2		_					
Hemorrhage			.,			.,	2	.,	.,		.,	.,
Within Normal Limits	-		Х			Х		Х	Х	Х	X	Х
Lymph Node												
Sequestered blood					.,	3			.,	v	17	37
Within Normal Limits			Х	X	Х		X	X	X	. х	Х	
Nerve, Peripheral				·	· ·	·	·	· ·	··	v	·	·
Within Normal Limits			X	Х	Α.						Х	
Ovary				·	·	v	v	v	· · ·	· · ·	· · ·	~
Within Normal Limits												Χ.
Pancreas Within Normal Limits	•										χ	
Parathyroid				^								
Not in plane of section											C-	
One of pair present			p		p		Р	Р			·	Р
Within Normal Limits				χ					x			X
Pituitary												
Tissue Not Present									С			
Within Normal Limits			х	Х	х	х	х	х		х	Х	χ.
Salivary Gland												
Within Normal Limits			X	х	х	Х	Х	Х	Х	Х	Х	Х
Skeletal Muscle												
Within Normal Limits			Х	Х	Х	Х	Х	х	Х	Х	Х	Х
Skin												
Tissue Not Present			С									
Within Normal Limits				Х	Х	X	Х	Х	Х	Х	X	χ
Spinal Cord				- 					- - -			
Within Normal Limits			χ	Х	X	Х	Х	Х	Х	Х	Х	Х

0	Animal Number:	U	U	U	U	U	U	U	U	U	
		7	7	7	7						7
		8	-	8	_		_	_		-	
		3	4	_		7	_	9			
	Fate:	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Organ/	Death Day:	9							9		
Diagnosis		0	0	0	0	0	0	0	0	0	C
Spieen											
Within Normal Limits		X	X	Х	X	Х	X	X	χ	X)
Stomach, Glandular							- -				
Mineralization									4		
Within Normal Limits		X	X	X	X	Х	X	X		X)
Stomach, Nonglandular											
Within Normal Limits		. X	X	χ	Х	X	X	χ	Х	X)
Thymus											
Hemorrhage				2	2			2			2
Within Normal Limits		X	X			X			X	X	
Thyroid											
Embryonic remnant			Ρ								}
One of pair present				Ρ						P	
Within Normal Limits		Х		Х	Х	Х	Х	Х	Х	Х	
Tongue											
Within Normal Limits		X	X	Х	X	X	Х	X	Х	· X	,
Trachea		-									
Within Normal Limits		· Х	X	Х	Х	X	Х	Х	Х	X	2
Urinary Bladder						- 					
Tissue Not Present			C							С	
Within Normal Limits		Х		Х	Х	Х	Х	Х	X		
Uterus											
Hydrometra					2					3	
Tissue Not Present			¢								
Within Normal Limits		Х		Х		Х	Х	. Х	Х		
Vagina		-									
Tissue Not Present			C								
Within Normal Limits		X		X	Х	X	Х	. Х	X	X	

Animal Number: 92.0713

Sex: Male

Group: (1) 0 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 635

Microscopic Observations:

Esophagus

Intestine

Parathyroid

Prostate

Thymus

Thyroid

Liver

-Tissue Not Present

-Tissue Not Present

Cassette 9 contained brain sections.

-Cytoplasmic vacuolization, mild

-Not in plane of section

-Inflammation, subacute, trace

-Hemorrhage, trace

-Within Normal Limits

One of pair present

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Heart, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0714

Sex: Male

Group: (1) 0 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 658

Microscopic Observations:

Adrenal Medulla

-One of pair present Within Normal Limits

Aorta

Liver

-Tissue Not Present

Parathyroid

-Cytoplasmic vacuolization, mild

-One of pair present

Within Normal Limits

Prostate

-Inflammation, subacute, mild

The following tissues were found to be within normal limits: Adrenal Cortex, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0715 Sex: Male Group: (1) 0 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 638

<u>Microscopic Observations:</u>

Adrenal Medulla

-One of pair present Within Normal Limits

Liver

-Cytoplasmic vacuolization, mild

The following tissues were found to be within normal limits: Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Parathyroid, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0716

Sex: Male

Group: (1) 0 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 629

<u>Microscopic Observations:</u>

Adrenal Medulla

Liver Parathyroid -One of pair present Within Normal Limits

-Cytoplasmic vacuolization, moderate

-One of pair present Within Normal Limits

The following tissues were found to be within normal limits: Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0717 Sex: Male Group: (1) 0 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 644

Microscopic Observations:

Kidney Liver

Parathyroid

-Inflammation, interstitial, trace -Cytoplasmic vacuolization, mild

-One of pair present Within Normal Limits

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,

Species: Rat

Project Number: 55-YJ81-91

90-DAY FEEDING STUDY OF 4-AMINO, 2-NITROTOLUENE IN RATS

Animal Number: 92.0717 Sex: Male

Fate: (Day= 90) Scheduled Euthanasia

Group: (1) 0 PPM

Printed on 06-09-1993. Accession Number: 644

<u>Microscopic Observations</u> (continued):

The following tissues were found to be within normal limits (continued): Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0718 Sex: Male Group: (1) 0 PPM

Printed on 06-09-1993. Accession Number: 648 Fate: (Day= 90) Scheduled Euthanasia

<u>Microscopic Observations:</u>

Adrenal Medulla

Aorta Liver

Parathyroid Thyroid

-One of pair present Within Normal Limits

-Tissue Not Present

-Microgranuloma, trace Cytoplasmic vacuolization, mild

-Not in plane of section

-One of pair present Within Normal Limits

The following tissues were found to be within normal limits: Adrenal Cortex, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thymus, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0719 Sex: Male

Fate: (Day= 90) Scheduled Euthanasia

Group: (1) 0 PPM

Printed on 06-09-1993. Accession Number: 699

Microscopic Observations:

Adrenal Medulla

Aorta Liver Parathyroid

-One of pair present Within Normal Limits -Tissue Not Present

-Cytoplasmic vacuolization, mild

-Not in plane of section

-Hemorrhage, trace

The following tissues were found to be within normal limits: Adrenal Cortex, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart,

Species: Rat

Project Number: 55-YJ81-91

90-DAY FEEDING STUDY OF 4-AMINO, 2-NITROTOLUENE IN RATS

Animal Number: 92.0719 Sex: Male Group: (1) 0 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 699

<u>Microscopic Observations</u> (continued):

The following tissues were found to be within normal limits (continued): Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0720 Group: (1) 0 PPM Sex: Male

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 697

<u>Microscopic Observations:</u>

Liver

-One of pair present Adrenal Medulla

Within Normal Limits

-Cytoplasmic vacuolization, mild

Aorta -Tissue Not Present

-Inflammation, subacute, trace **Prostate**

The following tissues were found to be within normal limits:

Adrenal Cortex, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Parathyroid, Pituitary, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0721 Group: (1) 0 PPM Sex: Male

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993.

Microscopic Observations:

Aorta

Liver

-Microgranuloma, trace Cytoplasmic vacuolization, moderate

-Tissue Not Present

Parathyroid

-One of pair present Within Normal Limits

Thymus

-Hemorrhage, trace

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thyroid, Tongue, Trachea, Urinary Bladder.

Species: Rat

Project Number: 55-YJ81-91

90-DAY FEEDING STUDY OF 4-AMINO, 2-NITROTOLUENE IN RATS

Animal Number: 92.0722 Sex: Male Group: (1) 0 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 708

Microscopic Observations:

Kidney Liver

Lung

Parathyroid

Thymus Thyroid -Regeneration, tubular, trace

-Cytoplasmic vacuolization, mild -Inflammation, interstitial, trace

-One of pair present Within Normal Limits -Hemorrhage, trace

-Embryonic remnant

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0753 | Sex: Female Group: (1) 0 PPM

Printed on 06-09-1993. Accession Number: 760 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations:

Adrenai Medulla

-One of pair present Within Normal Limits

Liver

-Cytoplasmic vacuolization, mild

The following tissues were found to be within normal limits: Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Parathyroid, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0754 Sex: Female Group: (1) O PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 713

Microscopic Observations:

Adrenal Medulla

-One of pair present Within Normal Limits -Microgranuloma, trace

Liver

Cytoplasmic vacuolization, mild

The following tissues were found to be within normal limits: Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,

Species: Rat

Project Number: 55-YJ81-91

90-DAY FEEDING STUDY OF 4-AMINO, 2-NITROTOLUENE IN RATS

Animal Number: 92.0754

Sex: Female Group: (1) 0 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on O6-09-1993. Accession Number: 713

Microscopic Observations (continued):

The following tissues were found to be within normal limits (continued): Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Parathyroid, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0755 Sex: Female Group: (1) 0 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 745

Microscopic Observations:

Liver

-Cytoplasmic vacuolization, mild

Parathyroid

-Not in plane of section

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0756 Sex: Female Group: (1) 0 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 744

Microscopic Observations:

Aorta

Liver

Parathyroid

-Tissue Not Present

-Cytoplasmic vacuolization, mild

-One of pair present Within Normal Limits

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0757 Sex: Female Group: (1) 0 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 783

Microscopic Observations:

Liver

Parathyroid

-Cytoplasmic vacuolization, mild

-One of pair present Within Normal Limits

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0758 Sex: Female Group: (1) 0 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 779

<u>Microscopic Observations:</u>

Adrenal Medulla

-One of pair present Within Normal Limits

Liver

-Cytoplasmic vacuolization, mild

The following tissues were found to be within normal limits:
Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,
Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine,
Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Parathyroid, Pituitary,
Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular,
Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0759 Sex: Female Group: (1) 0 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 726

Microscopic Observations:

Liver

 ${\bf Parathyroid}$

Thymus

-Cytoplasmic vacuolization, moderate

-Not in plane of section

-Hemorrhage, trace

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0760 Sex: Female Group: (1) 0 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 722

Microscopic Observations:

Kidney Liver

Parathyroid

Thymus Thyroid -Regeneration, tubular, trace

-Microgranuloma, trace

Cytoplasmic vacuolization, mild

-One of pair present
Within Normal Limits
-Hemorrhage, trace
-One of pair present
Within Normal Limits

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, F

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0761 Sex: Female Group: (1) 0 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 729

<u>Microscopic Observations:</u>

Liver

Parathyroid

Thymus

-Cytoplasmic vacuolization, mild

-One of pair present Within Normal Limits -Hemorrhage, trace

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0762 Sex: Female Group: (1) 0 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 756

Microscopic Observations:

Liver

-Microgranuloma, trace

Cytoplasmic vacuolization, moderate

Parathyroid -One of pair present
Within Normal Limits

William Horman

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0762 Sex: Female Group: (1) 0 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 756

<u>Microscopic Observations</u> (continued):

The following tissues were found to be within normal limits (continued):
Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine,
Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland,
Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus,
Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0793 Sex: Male Group: (2) O PPM/RESTRICTED DIET

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 637

Microscopic Observations:

Adrenal Meduila

Aorta Lung Parathyroid Prostate Thymus -One of pair present
Within Normal Limits
-Tissue Not Present
-Hemorrhage, trace
-Not in plane of section
-Inflammation, subacute, mild
-Hemorrhage, trace

The following tissues were found to be within normal limits:
Adrenal Cortex, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,
Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart,
Intestine, Kidney, Liver, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Salivary Gland,
Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular,
Stomach, Nonglandular, Testis, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0794 Sex: Male Group: (2) O PPM/RESTRICTED DIET

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 639

Microscopic Observations:

Thymus

-Hemorrhage, mild

The following tissues were found to be within normal limits:
Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,
Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart,
Intestine, Kidney, Liver, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Parathyroid, Pituitary,
Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen,
Stomach, Glandular, Stomach, Nonglandular, Testis, Thyroid, Tongue, Trachea, Urinary Bladder.

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0795 Sex: Male Group: (2) O PPM/RESTRICTED DIET

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 670

Microscopic Observations:

Lung

Parathyroid

Prostate Thymus -Hemorrhage, trace

-One of pair present
Within Normal Limits

-Inflammation, subacute, mild

-Hemorrhage, trace

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Kidney, Liver, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0796

Sex: Male

Group: (2) O PPM/RESTRICTED DIET

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 633

Microscopic Observations:

Adrenal Medulla

-One of pair present Within Normal Limits -Embryonic remnant

Thyroid

The following tissues were found to be within normal limits:
Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,
Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart,
Intestine, Kidney, Liver, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Parathyroid, Pituitary,
Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen,

Stomach, Glandular, Stomach, Nonglandular, Testis, Thymus, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0797

Sex: Male

Group: (2) O PPM/RESTRICTED DIET

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 704

Microscopic Observations:

Liver

Parathyroid

-Microgranuloma, trace

-Not in plane of section

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular,

Species: Rat

Project Number: 55-YJ81-91

90-DAY FEEDING STUDY OF 4-AMINO, 2-NITROTOLUENE IN RATS

Animal Number: 92.0797 Sex: Male Group: (2) O PPM/RESTRICTED DIET

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 704

<u>Microscopic Observations</u> (continued):

The following tissues were found to be within normal limits (continued): Stomach, Nonglandular, Testis, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0798 Sex: Male Group: (2) O PPM/RESTRICTED DIET

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 650

Microscopic Observations:

-Not in plane of section Adrenal Medulla **Epididymis** -Tissue Not Present

-Embryonic remnant Pituitary

-Inflammation, subacute, trace Prostate

The following tissues were found to be within normal limits:

Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Liver, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Parathyroid, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0799 Sex: Male Group: (2) O PPM/RESTRICTED DIET

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 682

Microscopic Observations:

-One of pair present Adrenal Medulla

Within Normal Limits

Heart -Hemorrhage, mild

Kidney -Regeneration, tubular, trace

Lung -Hemorrhage, trace Thymus -Hemorrhage, trace

Thyroid -Embryonic remnant

The following tissues were found to be within normal limits:

Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Intestine, Liver, Lymph Node, Nerve, Peripheral, Pancreas, Parathyroid, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Tongue, Trachea, Urinary Bladder.

Species: Rat

Project Number: 55-YJ81-91

90-DAY FEEDING STUDY OF 4-AMINO, 2-NITROTOLUENE IN RATS

Animal Number: 92.0800

Sex: Male

Group: (2) O PPM/RESTRICTED DIET

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 636

Microscopic Observations:

Parathyroid

-One of pair present Within Normal Limits

Thymus

-Hemorrhage, trace

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Kidney, Liver, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0801

Sex: Male

Group: (2) O PPM/RESTRICTED DIET

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 672

Microscopic Observations:

Liver

Thymus

-Microgranuloma, trace

-Hemorrhage, mild

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Parathyroid, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0802

Sex: Male

Group: (2) O PPM/RESTRICTED DIET

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 631

Microscopic Observations:

Liver

Prostate Thymus

-Microgranuloma, trace

-Inflammation, subacute, mild

-Hemorrhage, trace

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Parathyroid, Pituitary, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thyroid, Tongue, Trachea, Urinary Bladder.

Species: Rat

Project Number: 55-YJ81-91

90-DAY FEEDING STUDY OF 4-AMINO, 2-NITROTOLUENE IN RATS.

Animal Number: 92.0803 Sex: Female Group: (2) O PPM/RESTRICTED DIET

Printed on 06-09-1993. Accession Number: 773 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations:

Aorta

Liver

Parathyroid

Thymus

-Tissue Not Present

-Microgranuloma, trace

-One of pair present

Within Normal Limits

-Hemorrhage, trace

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Sex: Female Group: (2) O PPM/RESTRICTED DIET Animal Number: 92.0804

Printed on 06-09-1993. Accession Number: 789 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations:

Liver

Parathyroid

Thymus

Thyroid

Vagina

-Microgranuloma, trace

-Not in plane of section

-Hemorrhage, trace

-One of pair present Within Normal Limits

-Tissue Not Present

The following tissues were found to be within normal Limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Tongue, Trachea, Urinary Bladder, Uterus.

Animal Number: 92.0805 Sex: Female Group: (2) O PPM/RESTRICTED DIET

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 731

Microscopic Observations:

Liver

Ovary

Stomach, Glandular

Thymus Uterus

-Microgranuloma, trace

-One of pair present

Within Normal Limits

-Mineralization, mild

-Hemorrhage, trace

-Hydrometra, mild

Species: Rat

Project Number: 55-YJ81-91

90-DAY FEEDING STUDY OF 4-AMINO, 2-NITROTOLUENE IN RATS

Sex: Female Group: (2) O PPM/RESTRICTED DIET Animal Number: 92.0805

Printed on 06-09-1993. Accession Number: 731 Fate: (Day= 90) Scheduled Euthanasia

<u>Microscopic Observations</u> (continued):

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Parathyroid, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Nonglandular, Thyroid, Tongue, Trachea, Urinary Bladder, Vagina.

Sex: Female Group: (2) O PPM/RESTRICTED DIET Animal Number: 92.0806

Printed on 06-09-1993. Accession Number: 716 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations:

Aorta Liver Parathyroid

Thymus Thyroid -Tissue Not Present -Microgranuloma, trace -One of pair present Within Normal Limits -Hemorrhage, trace -One of pair present Within Normal Limits

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Sex: Female Group: (2) O PPM/RESTRICTED DIET Animal Number: 92.0807

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 770

<u>Microscopic Observations:</u>

Thymus

-Hemorrhage, trace

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Liver, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Parathyroid, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Species: Rat

Project Number: 55-YJ81-91

90-DAY FEEDING STUDY OF 4-AMINO, 2-NITROTOLUENE IN RATS

Sex: Female Group: (2) O PPM/RESTRICTED DIET Animal Number: 92.0808

Printed on 06-09-1993. Accession Number: 734 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations:

Liver

Parathyroid

Uterus

-Microgranuloma, trace

-One of pair present

Within Normal Limits

-Hydrometra, mild

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder, Vagina.

Animal Number: 92.0809 Sex: Female Group: (2) O PPM/RESTRICTED DIET

Printed on 06-09-1993. Accession Number: 790 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations:

Liver

Parathyroid

Thymus Thyroid -Microgranuloma, trace

-One of pair present

Within Normal Limits -Hemorrhage, trace

-One of pair present

Within Normal Limits

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine,

Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0810

Sex: Female Group: (2) O PPM/RESTRICTED DIET

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 769

Microscopic Observations:

Parathyroid

Thymus

Uterus

-Not in plane of section

-Hemorrhage, trace

-Hydrometra, mild

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0810 Sex: Female Group: (2) 0 PPM/RESTRICTED DIET

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 769

<u>Microscopic Observations</u> (continued):

The following tissues were found to be within normal limits (continued):
Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine,
Kidney, Liver, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland,
Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thyroid,
Tongue, Trachea, Urinary Bladder, Vagina.

Animal Number: 92.0811 Sex: Female Group: (2) O PPM/RESTRICTED DIET

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 766

Microscopic Observations:

Liver Lung

Parathyroid Thymus

Thyroid

-Microgranuloma, trace

-Alveolar histiocytosis, trace

-Not in plane of section

-Hemorrhage, trace

-One of pair present Within Normal Limits

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0812 Sex: Female Group: (2) O PPM/RESTRICTED DIET

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 738

Microscopic Observations:

Adrenal Medulla

Parathyroid Thyroid -One of pair present
Within Normal Limits
-Not in plane of section
-One of pair present
Within Normal Limits

The following tissues were found to be within normal limits:
Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,
Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine,
Kidney, Liver, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland,
Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus,
Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0723 Sex: Male Group: (3) 500 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 702

Microscopic Observations:

Liver

Pancreas

Parathyroid

Prostate Salivary Gland Skin

Skin Thyroid -Microgranuloma, trace

Cytoplasmic vacuolization, mild

-Inflammation, subacute, trace

Hemorrhage, trace
-One of pair present
Within Normal Limits

-Inflammation, subacute, trace

-Tissue Not Present

-Tissue Not Present

-Embryonic remnant

The following tissues were found to be within normal limits:
Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,
Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart,
Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pituitary, Seminal Vesicle,
Skeletal Muscle, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thymus,
Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0724

Sex: Male

Group: (3) 500 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 655

Microscopic Observations:

Liver

Parathyroid

Thymus

-Microgranuloma, traceCytoplasmic vacuolization, moderate-One of pair present

Within Normal Limits
-Hemorrhage, trace

The following tissues were found to be within normal limits:
Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,
Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart,
Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate,
Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular,
Stomach, Nonglandular, Testis, Thyroid, Tongue, Trachea, Urinary Bladder.

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0725 Sex: Male Group: (3) 500 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 669

Microscopic Observations:

Adrenal Medulla

Kidney

Liver Parathyroid

Prostate

-One of pair present Within Normal Limits

-Intratubular proteinic material, trace Regeneration, tubular, trace

-Cytoplasmic vacuolization, moderate

-One of pair present Within Normal Limits

-Inflammation, subacute, moderate

The following tissues were found to be within normal limits:
Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,
Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart,
Intestine, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Salivary Gland,
Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular,
Stomach, Nonglandular, Testis, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0726

Sex: Male

Group: (3) 500 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 652

Microscopic Observations:

Adrenal Medulla

Kidney Liver Lung Parathyroid -One of pair present
Within Normal Limits

-Regeneration, tubular, trace

-Cytoplasmic vacuolization, moderate

-Inflammation, interstitial, trace

-Not in plane of section

The following tissues were found to be within normal limits:
Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,
Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart,
Intestine, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland,
Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular,
Stomach, Nonglandular, Testis, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Species: Rat

Project Number: 55-YJ81-91

Group: (3) 500 PPM Animal Number: 92.0727 Sex: Male

Printed on 06-09-1993. Accession Number: 689 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations:

Liver

Parathyroid Thymus Thyroid

-Microgranuloma, trace

Cytoplasmic vacuolization, moderate

-Not in plane of section

-Hemorrhage, trace

-One of pair present

Within Normal Limits

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0728

Sex: Male

Group: (3) 500 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 646

Microscopic Observations:

Liver

Lung Thymus -Cytoplasmic vacuolization, moderate Microgranuloma, trace

-Congestion, mild

-Hemorrhage, trace

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,

Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Kidney, Lymph Node, Nerve, Peripheral, Pancreas, Parathyroid, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0729

Group: (3) 500 PPM Sex: Male

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 680

Microscopic Observations:

Kidney Liver Parathyroid -Regeneration, tubular, trace

-Cytoplasmic vacuolization, moderate

-One of pair present

Within Normal Limits

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0729 Sex: Male Group: (3) 500 PPM

Animal Number: 92.0729 Sex: Male Group: (3) 500 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 680

Microscopic Observations (continued):

The following tissues were found to be within normal limits (continued):
Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart,
Intestine, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland,
Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular,
Stomach, Nonglandular, Testis, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0730 Sex: Male Group: (3) 500 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 706

Microscopic Observations:

Liver

-Microgranuloma, trace
Cytoplasmic vacuolization, moderate

Parathyroid -One of pair present Within Normal Limits

Thymus -Hemorrhage, trace

The following tissues were found to be within normal limits:
Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,
Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart,
Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate,

Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular,

Stomach, Nonglandular, Testis, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0731 Sex: Male Group: (3) 500 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 712

Microscopic Observations:

Adrenal Medulla

Liver

Parathyroid

Prostate Thymus -One of pair present Within Normal Limits -Microgranuloma, trace

Cytoplasmic vacuolization, moderate

-One of pair present Within Normal Limits

-Inflammation, subacute, mild

-Hemorrhage, trace

The following tissues were found to be within normal limits:
Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,
Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart,
Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Salivary Gland,

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0731

Sex: Male

Group: (3) 500 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 712

<u>Microscopic Observations</u> (continued):

The following tissues were found to be within normal limits (continued): Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thyroid, Tongue, Trachea, Urinary Bladder:

Animal Number: 92.0732

Sex: Male

Group: (3) 500 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 703

Microscopic Observations:

Adrenal Medulla

-One of pair present Within Normal Limits

Liver

-Cytoplasmic vacuolization, mild

Parathyroid

-One of pair present Within Normal Limits

Thymus

-Hemorrhage, trace

-Embryonic remnant

Thyroid The following tissues were found to be within normal limits:

Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0763

Sex: Female Group: (3) 500 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 719

Microscopic Observations:

Liver

-Microgranuloma, trace Cytoplasmic vacuolization, mild

Parathyroid

-Not in plane of section

Thymus

-Hemorrhage, trace

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Species: Rat

Project Number: 55-YJ81-91

Sex: Female Group: (3) 500 PPM Animal Number: 92.0764

Printed on 06-09-1993. Accession Number: 753 Fate: (Day= 90) Scheduled Euthanasia

<u>Microscopic Observations:</u>

Liver

-Microgranuloma, trace Cytoplasmic vacuolization, moderate

Parathyroid

Thymus

-Not in plane of section

-Hemorrhage, trace

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina. ______

Animal Number: 92.0765

Sex: Female Group: (3) 500 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 718

Microscopic Observations:

Liver

Parathyroid

Thymus Thyroid -Microgranuloma, trace Cytoplasmic vacuolization, mild

-One of pair present Within Normal Limits

-Hemorrhage, trace

-One of pair present Within Normal Limits

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0766

Sex: Female Group: (3) 500 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 735

Microscopic Observations:

Aorta

Liver

-Tissue Not Present

-Microgranuloma, trace

Cytoplasmic vacuolization, moderate

Skin

Thymus

-Tissue Not Present

-Hemorrhage, trace

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0766

Sex: Female Group: (3) 500 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 735

Microscopic Observations (continued):

The following tissues were found to be within normal limits (continued): Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Eye, Heart, Intestine, Kidney, Łung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Parathyroid, Pituitary, Salivary Gland, Skeletal Muscle, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0767

Sex: Female Group: (3) 500 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 787

Microscopic Observations:

Parathyroid

-Not in plane of section

brum, ine, mo show # 12 nus, The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow) Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Liver, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0768

Sex: Female Group: (3) 500 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 759

Microscopic Observations:

Liver

Parathyroid

Thyroid Uterus

-Microgranuloma, trace -One of pair present Within Normal Limits -Embryonic remnant -Hydrometra, mild

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Tongue, Trachea, Urinary Bladder, Vagina.

Species: Rat

Project Number: 55-YJ81-91

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2 - Slocks : plider #/2 (see 90.0767)

Sex: Female Group: (3) 500 PPM Animal Number: 92.0769

Printed on 06-09-1993. Accession Number: 724 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations:

Liver

Parathyroid

Uterus

-Microgranuloma, trace

-Not in plane of section

-Hydrometra, mild

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder, Vagina.

Sex: Female Group: (3) 500 PPM Animal Number: 92.0770

Printed on 06-09-1993. Accession Number: 749 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations:

Liver

-Microgranuloma, trace

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Parathyroid, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Sex: Female Group: (3) 500 PPM Animal Number: 92.0771

Printed on 06-09-1993. Accession Number: 755 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations:

Liver

Parathyroid

-Microgranuloma, trace -One of pair present Within Normal Limits -Hemorrhage, trace

Thymus

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Species: Rat

Project Number: 55-YJ81-91

Sex: Female Group: (3) 500 PPM Animal Number: 92.0772

Printed on 06-09-1993. Accession Number: 742 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations:

Parathyroid

-One of pair present Within Normal Limits

Thymus

-Hemorrhage, trace

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Liver, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0733

Sex: Male

Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 642

Microscopic Observations:

Liver

-Cytoplasmic vacuolization, moderate Microgranuloma, trace

Luna

Parathyroid

-Hemorrhage, mild

-One of pair present Within Normal Limits

Prostate Testis

-Inflammation, subacute, trace -Dilatation, tubular, mild

Thyroid

-One of pair present

Within Normal Limits

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Kidney, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0734

Sex: Male

Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 694

Microscopic Observations:

Kidney

-Intratubular proteinic material, trace Regeneration, tubular, trace

Liver **Pancreas** -Cytoplasmic vacuolization, moderate

-Inflammation, subacute, trace

Parathyroid

-One of pair present

Within Normal Limits

Species: Rat

Project Number: 55-YJ81-91

Group: (4) 1000 PPM Animal Number: 92.0734 Sex: Male

Printed on 06-09-1993. Accession Number: 694 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations (continued):

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Lung, Lymph Node, Nerve, Peripheral, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0735

Sex: Male

Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 662

Microscopic Observations:

Kidney Liver

Parathyroid

Testis

-Intratubular proteinic material, trace

-Microgranuloma, trace

Cytoplasmic vacuolization, moderate

-One of pair present Within Normal Limits -Dilatation, tubular, mild

Hypospermatogenesis, mild

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0736

Sex: Male

Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 701

Microscopic Observations:

Epididymis

Heart

Liver

Pancreas

Parathyroid

Prostate Testis

Thymus

-Hypospermia, moderate

-Cardiomyopathy, mild

-Cytoplasmic vacuolization, moderate

-Inflammation, subacute, trace

-One of pair present Within Normal Limits

-Inflammation, subacute, trace

-Hypospermatogenesis, moderate

-Hemorrhage, trace

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0736

Sex: Male

Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 701

Microscopic Observations (continued):

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pituitary, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0737

Sex: Male

Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 656

Microscopic Observations:

Kidney Liver

Lung

Parathyroid

Testis Thymus

Thyroid

-Regeneration, tubular, trace

-Cytoplasmic vacuolization, moderate

Microgranuloma, trace

-Inflammation, interstitial, trace

-Not in plane of section

-Hypospermatogenesis, moderate

-Hemorrhage, trace

-Embryonic remnant

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0738

Sex: Male

Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 681

Microscopic Observations:

Liver

Parathyroid

-Cytoplasmic vacuolization, moderate

-One of pair present Within Normal Limits

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart,

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0738

Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 681

Microscopic Observations (continued):

The following tissues were found to be within normal limits (continued): Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0739

Sex: Male

Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 688

Microscopic Observations:

Epididymis

Liver

Pancreas

Testis

Thymus

-Hypospermia, severe

Inflammation, granulomatous, moderate

-Cytoplasmic vacuolization, moderate

-Inflammation, subacute, moderate

-Hypospermatogenesis, severe

-Hemorrhage, trace

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Parathyroid, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0740

Sex: Male

Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 640

Microscopic Observations:

Aorta

Kidney

Liver

-Tissue Not Present

-Inflammation, interstitial, trace Regeneration, tubular, trace

-Microgranuloma, trace

Cytoplasmic vacuolization, moderate

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Parathyroid, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0741

Sex: Male

Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 654

Microscopic Observations:

Epididymis Liver Lung

Parathyroid

Testis Thymus -Hypospermia, severe

-Cytoplasmic vacuolization, moderate

-Alveolar histiocytosis, trace

-One of pair present Within Normal Limits

-Hypospermatogenesis, severe

-Hemorrhage, trace

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland,

Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular,

Stomach, Nonglandular, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0742

Sex: Male

Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 661

Microscopic Observations:

Liver

Lung

Urinary Bladder

-Cytoplasmic vacuolization, moderate Microgranuloma, trace

-Alveolar histiocytosis, trace

-Tissue Not Present

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,

Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Epididymis, Esophagus, Heart, Intestine, Kidney, Lymph Node, Nerve, Peripheral, Pancreas, Parathyroid, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Testis, Thymus, Thyroid, Tongue, Trachea.

Animal Number: 92.0773

Sex: Female Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 732

Microscopic Observations:

Parathyroid

-Not in plane of section

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine,

Species: Rat

Project Number: 55-YJ81-91

Sex: Female Group: (4) 1000 PPM Animal Number: 92.0773

Printed on 06-09-1993. Accession Number: 732 Fate: (Day= 90) Scheduled Euthanasia

<u>Microscopic Observations</u> (continued):

The following tissues were found to be within normal limits (continued): Kidney, Liver, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Sex: Female Group: (4) 1000 PPM Animal Number: 92.0774

Printed on 06-09-1993. Accession Number: 776 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations:

Liver Parathyroid -Microgranuloma, trace -One of pair present Within Normal Limits

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Sex: Female Group: (4) 1000 PPM Animal Number: 92.0775

Printed on 06-09-1993. Accession Number: 774 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations:

Kidney

Liver

Thyroid

Uterus

-Regeneration, tubular, mild Intratubular proteinic material, mild

-Cytoplasmic vacuolization, moderate Microgranuloma, trace

Inflammation, subacute, portal, trace

-One of pair present Within Normal Limits -Hydrometra, moderate

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Parathyroid, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Tongue, Trachea, Urinary Bladder, Vagina.

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0776 Sex: Female Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 730

<u>Microscopic Observations:</u>

Liver

-Microgranuloma, trace

Cytoplasmic vacuolization, mild

Parathyroid -One of pair present

Within Normal Limits

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0777 Sex: Female Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 751

Microscopic Observations:

Liver

-Cytoplasmic vacuolization, moderate
Inflammation, subacute, portal, trace

Parathyroid -One of pair present
Within Normal Limits

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0778 Sex: Female Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 740

Microscopic Observations:

Adrenal Medulla

Parathyroid

Liver

Uterus

-One of pair present Within Normal Limits -Microgranuloma, trace

Cytoplasmic vacuolization, moderate

One of pair present
 Within Normal Limits
 Hydrometra, trace

Within Nor

The following tissues were found to be within normal limits: Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,

Species: Rat

Project Number: 55-YJ81-91

Sex: Female Group: (4) 1000 PPM Animal Number: 92.0778

Printed on 06-09-1993. Accession Number: 740 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations (continued):

The following tissues were found to be within normal limits (continued): Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder, Vagina.

Sex: Female Group: (4) 1000 PPM Animal Number: 92.0779

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 781

Microscopic Observations:

Aorta

Liver

Parathyroid

Thymus Tongue -Tissue Not Present

-Microgranuloma, trace

Cytoplasmic vacuolization, moderate

-One of pair present Within Normal Limits -Hemorrhage, trace -One of pair present Within Normal Limits

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Eye, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thyroid, Trachea, Urinary Bladder, Uterus, Vagina.

Sex: Female Group: (4) 1000 PPM Animal Number: 92.0780

Printed on 06-09-1993. Accession Number: 794 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations:

Adrenal Medulla

Liver

Parathyroid Thymus Thyroid

-One of pair present Within Normal Limits -Microgranuloma, trace

Cytoplasmic vacuolization, moderate

-Not in plane of section -Hemorrhage, trace

-Embryonic remnant

The following tissues were found to be within normal limits:

Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0780 Sex: Female Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 794

<u>Microscopic Observations</u> (continued):

The following tissues were found to be within normal limits (continued):
Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine,
Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland,
Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Tongue,
Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0781. Sex: Female Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 757

Microscopic Observations:

Liver

-Cytoplasmic vacuolization, moderate Microgranuloma, trace Inflammation, subacute, portal, trace -One of pair present

Parathyroid -One of pair present
Within Normal Limits

-Embryonic remnant

Thyroid

The following tissues were found to be within normal limits:
Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,
Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine,
Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland,
Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus,
Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0782 Sex: Female Group: (4) 1000 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 750

Microscopic Observations:

Liver

-Cytoplasmic vacuolization, moderate Microgranuloma, trace -Hemorrhage, trace

Thymus

The following tissues were found to be within normal limits:
Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Parathyroid, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0743

Sex: Male

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 663

Microscopic Observations:

Epididymis

Heart

Kidney

Liver

-Hypospermia, moderate

-Cardiomyopathy, mild

-Regeneration, tubular, trace

-Necrosis, coagulative, focal, mild Cytoplasmic vacuolization, severe Inflammation, subacute, portal, trace

-Hypospermatogenesis, moderate

Testis

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Intestine, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Parathyroid, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0744

Sex: Male

Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 678

Microscopic Observations:

Epididymis

Heart

Kidney

Liver

Parathyroid

Testis

-Hypospermia, severe

-Cardiomyopathy, mild

-Hydronephrosis, moderate

-Microgranuloma, trace

Inflammation, subacute, portal, trace Cytoplasmic vacuolization, severe

-One of pair present

Within Normal Limits

-Hypospermatogenesis, severe

Granuloma, spermatic, mild

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Intestine, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0745

Sex: Male

Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 634

Microscopic Observations:

Epididymis

Heart

Intestine

Kidney

Liver

Prostate

Testis

-Hypospermia, severe

-Cardiomyopathy, mild

-Within Normal Limits

Only two sections of intestine present.

-Regeneration, tubular, trace

Intratubular proteinic material, trace Inflammation, interstitial, trace

-Microgranuloma, trace

Cytoplasmic vacuolization, moderate

-Inflammation, chronic active, severe

-Hypospermatogenesis, severe

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Parathyroid, Pituitary, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0746

Sex: Male

Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 641

Microscopic Observations:

Aorta

Epididymis

Heart

Kidney

Liver

Parathyroid

Prostate

Testis

Thyroid

-Tissue Not Present

-Hypospermia, severe

-Cardiomyopathy, mild

-Hydronephrosis, moderate Intratubular proteinic material, trace

-Cytoplasmic vacuolization, moderate

Inflammation, subacute, trace

Microgranuloma, trace

-Not in plane of section

-Inflammation, subacute, mild

-Hypospermatogenesis, severe

-Embryonic remnant

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Intestine, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Salivary Gland, Seminal Vesicle,

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0746

Sex: Male

Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 641

Microscopic Observations (continued):

The following tissues were found to be within normal limits (continued):

Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus,

Tongue, Trachea, Urinary Bladder.

Animai Number: 92.0747

Sex: Male

Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 690

Microscopic Observations:

Epididymis

Heart

Kidney

Liver

Parathyroid

Testis

Thymus

Thyroid

-Hypospermia, severe

-Cardiomyopathy; trace

-Regeneration, tubular, trace

-Cytoplasmic vacuolization, moderate

Microgranuloma, trace

-One of pair present Within Normal Limits

-Hypospermatogenesis, severe

-Hemorrhage, trace

-Embryonic remnant

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Intestine, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0748

Sex: Male

Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 649

Microscopic Observations:

Adrenal Medulla

Epididymis

Heart

Liver

Parathyroid

Pituitary Testis

Thymus

-One of pair present Within Normal Limits

-Hypospermia, moderate

Inflammation, subacute, trace

-Cardiomyopathy, trace

-Cytoplasmic vacuolization, moderate Inflammation, subacute, portal, mild

-Not in plane of section

-Tissue Not Present

-Hypospermatogenesis, moderate

-Hemorrhage, trace

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0748

Sex: Male

Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 649

<u>Microscopic Observations</u> (continued):

Thyroid

-One of pair present Within Normal Limits

The following tissues were found to be within normal limits:
Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,
Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Intestine, Kidney,
Lung, Lymph Node, Nerve, Peripheral, Pancreas, Prostate, Salivary Gland, Seminal Vesicle,
Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Tongue,
Trachea, Urinary Bladder.

Animal Number: 92.0749

Sex: Male

Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 679

Microscopic Observations:

Aorta

Brain, Cerebellum

Brain, Cerebrum

Brain, Medulla Oblongata

Brain, Midbrain

Brain, Pons

Epididymis

General Comments

Heart

Liver

Parathyroid

Testis

Thymus

-Tissue Not Present

-One of pair present

Hypospermia, moderate

-Cassette #1 has three sections of intestine

rather than brain.

-Cardiomyopathy, mild

-Cytoplasmic vacuolization, moderate
Inflammation, subacute, portal, trace

-One of pair present

Within Normal Limits

-Hypospermatogenesis, moderate

-Hemorrhage, trace

The following tissues were found to be within normal limits:
Adrenal Cortex, Adrenal Medulla, Bone Marrow, Femur, Duodenum, Esophagus, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thyroid, Tongue, Trachea, Urinary Bladder.

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0750

Sex: Male

Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 643

Microscopic Observations:

Aorta

Epididymis

Kidney

Liver

Pancreas

Testis

-Tissue Not Present

-Hypospermia, moderate

-Intratubular proteinic material, trace

Regeneration, tubular, trace

-Cytoplasmic vacuolization, moderate

-Inflammation, subacute, mild

-Hypospermatogenesis, moderate

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Lung, Lymph Node, Nerve, Peripheral, Parathyroid, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0751

Sex: Male

Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 675

Microscopic Observations:

Epididymis

Kidney

-Hypospermia, moderate

-Hemorrhage, severe

Intratubular proteinic material, trace

-Cytoplasmic vacuolization, moderate

Necrosis, severe

Liver

Inflammation, subacute, portal, trace -Alveolar histiocytosis, trace

Luna

Parathyroid

-One of pair present

Spleen

Testis

Within Normal Limits

-Inflammation, subacute, capsular, moderate -Hypospermatogenesis, severe

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Lymph Node, Nerve, Peripheral, Pancreas, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tonque, Trachea, Urinary Bladder.

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0752

Sex: Male

Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 632

Microscopic Observations:

Adrenal Medulla

Epididymis

Heart

Liver

Testis

-One of pair present Within Normal Limits

-Hypospermia, severe

Granuloma, spermatic, moderate

-Cardiomyopathy, mild

-Cytoplasmic vacuolization, moderate

Microgranuloma, trace

-Hypospermatogenesis, severe

The following tissues were found to be within normal limits: Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Pancreas, Parathyroid, Pituitary, Prostate, Salivary Gland, Seminal Vesicle, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder.

Animal Number: 92.0783

Sex: Female Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 768

Microscopic Observations:

Aorta

Liver

Parathyroid

Skin

-Tissue Not Present

-Microgranuloma, trace

Cytoplasmic vacuolization, moderate

-One of pair present Within Normal Limits

-Tissue Not Present

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus,

Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0784 Sex: Female Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 761

Microscopic Observations:

Urinary Bladder

Liver

Luna

Thyroid

Uterus Vagina -Cytoplasmic vacuolization, moderate

Microgranuloma, trace

-Alveolar histiocytosis, trace

-Embryonic remnant

-Tissue Not Present

Tissue Not Present

-Tissue Not Present

-Tissue Not Present

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Parathyroid, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Tongue, Trachea.

Animal Number: 92.0785 Sex: Female Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 784

Microscopic Observations:

Adrenal Medulla

Liver

Lung Parathyroid

Thymus

Thyroid

Adrenal Cortex

-One of pair present Within Normal Limits

-One of pair present

-une or pair pre

Within Normal Limits

-Cytoplasmic vacuolization, moderate

Microgranuloma, trace

-Alveolar histiocytosis, trace

-One of pair present

Within Normal Limits

-Hemorrhage, trace

-One of pair present

Within Normal Limits

The following tissues were found to be within normal limits:

Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Species: Rat

Project Number: 55-YJ81-91

90-DAY FEEDING STUDY OF 4-AMINO, 2-NITROTOLUENE IN RATS

Animal Number: 92.0786 Sex: Female Group: (5) 2000 PPM

Printed on 06-09-1993. Accession Number: 771 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations:

Adrenal Medulla

-One of pair present Within Normal Limits

Liver

-Cytoplasmic vacuolization, moderate

Microgranuloma, trace

-Sequestered blood, mild

-Hemorrhage, trace

-Hydrometra, trace

Lymph Node Thymus

Uterus

The following tissues were found to be within normal limits: Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Nerve, Peripheral, Ovary, Pancreas, Parathyroid, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thyroid, Tongue, Trachea, Urinary Bladder, Vagina.

Animal Number: 92.0787 Sex: Female Group: (5) 2000 PPM

Printed on 06-09-1993. Accession Number: 778 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations:

Liver

Lung

Parathyroid

-Cytoplasmic vacuolization, mild

-Hemorrhage, trace

-One of pair present Within Normal Limits

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0788 Sex: Female Group: (5) 2000 PPM

Printed on 06-09-1993. Accession Number: 725 Fate: (Day= 90) Scheduled Euthanasia

Microscopic Observations:

Adrenal Medulla

-One of pair present Within Normal Limits -Microgranuloma, trace

Liver

Cytoplasmic vacuolization, mild

Parathyroid

-One of pair present Within Normal Limits

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0788 Sex: Female Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 725

<u>Microscopic Observations</u> (continued):

-Hemorrhage, trace

The following tissues were found to be within normal limits: Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0789 Sex: Female Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 715

Microscopic Observations:

Adrenal Medulla

-One of pair present Within Normal Limits

Liver

-Cytoplasmic vacuolization, moderate

Microgranuloma, trace Inflammation, subacute, portal, trace

Pituitary **Thymus**

-Tissue Not Present -Hemorrhage, trace

The following tissues were found to be within normal limits: Adrenal Cortex, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Parathyroid, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0790 Sex: Female Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 727

Microscopic Observations:

Kidney

-Intratubular proteinic material, mild Regeneration, tubular, mild

Liver

-Microgranuloma, trace Inflammation, subacute, portal, trace Cytoplasmic vacuolization, severe

Parathyroid Stomach, Glandular

-Not in plane of section -Mineralization, moderate

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,

Species: Rat

Project Number: 55-YJ81-91

90-DAY FEEDING STUDY OF 4-AMINO, 2-NITROTOLUENE IN RATS

Animal Number: 92.0790

Sex: Female Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 727

Microscopic Observations (continued):

The following tissues were found to be within normal limits (continued): Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Nonglandular, Thymus, Thyroid, Tongue, Trachea, Urinary Bladder, Uterus, Vagina.

Animal Number: 92.0791

Sex: Female Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 736

Microscopic Observations:

Liver

-Microgranuloma, trace Cytoplasmic vacuolization, severe

Parathyroid

-Not in plane of section -One of pair present

Thyroid

Within Normal Limits -Tissue Not Present

Urinary Bladder

Uterus

-Hydrometra, mild

The following tissues were found to be within normal limits: Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum, Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine, Kidney, Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland, Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Thymus, Tongue, Trachea, Vagina.

Animal Number: 92.0792

Sex: Female Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia

Printed on 06-09-1993. Accession Number: 714

Microscopic Observations:

Kidney Liver

-Regeneration, tubular, trace

-Cytoplasmic vacuolization, moderate

Parathyroid

Microgranuloma, trace -One of pair present Within Normal Limits

Thymus Thyroid -Hemorrhage, trace

Urinary Bladder

-Embryonic remnant -Tissue Not Present

The following tissues were found to be within normal limits:

Adrenal Cortex, Adrenal Medulla, Aorta, Bone Marrow, Femur, Brain, Cerebellum, Brain, Cerebrum,

Species: Rat

Project Number: 55-YJ81-91

Animal Number: 92.0792 Sex: Female Group: (5) 2000 PPM

Fate: (Day= 90) Scheduled Euthanasia Printed on 06-09-1993. Accession Number: 714

Microscopic Observations (continued):

The following tissues were found to be within normal limits (continued):
Brain, Medulla Oblongata, Brain, Midbrain, Brain, Pons, Duodenum, Esophagus, Heart, Intestine,
Lung, Lymph Node, Nerve, Peripheral, Ovary, Pancreas, Pituitary, Salivary Gland,
Skeletal Muscle, Skin, Spinal Cord, Spleen, Stomach, Glandular, Stomach, Nonglandular, Tongue,
Trachea, Uterus, Vagina.

Species: Rat

Project Number: 55-YJ81-91

George A. Parker, D.V.M., Ltd.

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Telephone (703) 481-1122

Fax (703) 481-3224

Mrs. Pat Beall US Army Environmental Hygiene Agency Tox Division, Bldg E-2100 Aberdeen Proving Ground, MD 21010-5422

June 10, 1993

Dear Mrs. Beall:

Enclosed are two copies of the pathology report, microslides, paraffin blocks, and histology processing records from 100 rats from the 90-day feeding study of 4-amino, 2-nitrotoluene.

The report is signed, and can be considered a final report if there are no revisions. If there are any revisions, this version will be considered as a draft report.

Sincerely yours,

George A. Parker, DVM